

Assessment of Some Common Commercial Poultry Feed on Broiler Performance in Mubi Adamawa State Nigeria

¹P.A. Addass, ¹A. Elijah, ¹A. Midau and ²A.U. Lawan

¹Department of Animal Production, Adamawa State University, P.M.B. 25 Mubi Adamawa State, Nigeria

²Department of Animal Production, Federal Polytechnic Mubi, Adamawa State, Nigeria

Abstract: The research was conducted at the teaching and research (T&R) farm Sahuda road Mubi of the Department of Animal Production, Adamawa State University (ADSU) Mubi to evaluate the four most common commercial poultry feeds used in the area. The feeds are Niger feed, feed master, vital feed and Surry-J coded as diet I, II, III and IV, respectively. A total of 96 Anak 2000 broiler chicks were used for the study which lasted for a period of nine weeks. Each diet was replicated three times with eight birds per replicate making 24 birds per each treatment. Broiler starter and finisher of the four different feeds were used for the brooding and finishing stages, respectively. Feeds and clean water were supplied at all times. Proximate analyses for the four treatments diets were performed to ascertain the nutrients content and to compare with what was written on the feed labels. Significant ($P < 0.001$) weekly feed intake and growth performance was recorded on each diet during brooding and finishing stages. However, non significant feed intake and growth performance was observed on the four diets. Highest feed conversion ratio (FCR) was recorded on diet I during brooding (0.81) and finishing (0.97) stages. In conclusion, all the four different commercial diets used in this study are highly recommended for broiler production here in Mubi and its environs.

Key words: Commercial feeds • Broiler • Feed intake • Growth performance

INTRODUCTION

Most of the commercial poultry farmers depend on commercial feeds for their stock. It is expected that poultry nutritionists have to quantify resultant losses in birds performance when birds are fed sub-standard commercial diets compared to the standard ones. Dick [1] suggested that harmonization of feed qualities can only be possible when a given standard is adopted nationwide. In recent times, it has been noted that most commercial feeds failed to meet up with the national requirement of birds. In many cases there observed delaying in reaching market weight of broilers; the proliferation of feed meals with different trademarks has not adequately created the expected economically viable competition for poultry farmers. Ogunwolere and Onwuka [2] reported that apart from the highest crude fiber contents in most commercial feeds, the recommended and noticeable low crude protein observed in some commercial livestock feeds, the finished feed and feed ingredients are adulterated with saw dust, sand and maize bran. Wiebe [3] stated that

the recommended nutrients levels in Nigeria. The poultry industry has continued to decline as a result of feeding low quality feed as well as high cost of feeds which account for about 75% of the total cost of production [4,5]. The poultry industry in Nigeria is gaining rapid recognition and attention due to the high demand of animal protein. The poultry are important to both government and private sectors. Poultry products are among the most important food items in Nigeria. It is only meat items that cut across all barriers of religions, race and age class all over the world. It is believed that Nigeria will be one of the brightest market place for poultry production in the world. Due to the rapid growing human population in Nigeria, there is a need to build food strength to ensure socioeconomic stability and productivity of human life.

This research work intended to evaluate the nutrients qualities of the most common four different commercial poultry feeds on broiler performance so as to make practical recommendations to poultry farmers regarding these feeds in the study area.

MATERIALS AND METHODS

Ninety six (96) Anak (2000) broiler chicks were purchased at Zartech farms Jos, Plateau State. The birds were randomly allocated to the four different treatment diets, prior to the chicks arrival, all necessary sanitary measures were done, which includes thorough washing, disinfection using detergent and Izal. Three days before the chick's arrival, fresh litter of saw dust of 5cm deep was evenly spread in the poultry house. Lightening and heating equipments including 200watts electric bulbs, kerosene stoves, bush lamps were used. Feeders and waterers of aluminum, rubber boots and a white laboratory coat were used as uniform.

Two days before chick's arrival everything was in place and tested. Three to five hours before chick's arrival, all heating and lightening systems were put on; fresh water and feed were also ready. On arrival, the chick boxes were directly carried into the poultry house near source of light and heat which were randomly assigned to the four different diets. Twenty four birds per diets which were replicated three times, eight birds per replicate. Vitalyte in water was used as anti-stress for five days and feed was supplied at 5% of body weight after brooding. All treatment and vaccinations schedules were duly observed. All necessary husbandry practices were duly observed. Throughout the research period, no

visitor was allowed to the site neither did anybody working with the birds was allowed to visit any poultry farm or any poultry business is being carried out. From day one to seven, chicks were fed *ad libitum* after which 10% of the body weight was fed throughout the research period.

Data collected include feed intake and weight gain which were subject to analysis of variance and means separation by Duncan's multiple range Test, [6] and standard error.

RESULTS

Shown in Table 1 is the proximate analysis of the various treatment diets to ascertain the proximate chemical composition of each of the diet used in the study. Generally all the feeds were shown similar nutrients composition except on percent crude fiber content which was observed to be least in diet I (Niger feed) both in the starter (4.00%) and finisher (4.20%) crude fiber, while the other diets has approximately 5.00% CF. diets II and IV however, shown highest percentage of ash content both in the starter (2.50 and 2.50%) and finisher feed (3.20 and 2.50%), while diets I and III had least approximately 2.00%.

Significantly ($P<0.05$) average weekly feed intake was depicted on all the four treatment diets shown in Table 2. Feed intake was shown to be increasing as the birds grow

Table 1: Proximate chemical composition of four different commercial diets in Percentage (%)

Diet	DM	CP	CF	EE	ASH	NFE	OM
NF-S	97.00	22.00	4.00	8.00	2.00	61.00	95.00
NF-F	96.00	20.00	4.20	5.00	2.10	64.70	93.90
FM-S	97.50	22.50	4.50	8.60	2.50	59.40	95.00
FM-F	96.00	20.50	5.50	7.00	3.20	59.80	92.80
VF-S	97.00	21.00	5.10	8.50	2.30	6.20	94.00
VF-F	96.50	19.20	5.40	8.48	2.30	61.12	94.20
SJ-S	96.20	25.50	4.50	8.60	2.50	59.40	95.00
SJ-F	96.00	22.00	5.00	5.00	2.50	61.50	93.50

NF-S and -F= Niger feed starter and finisher, FM-S and -F=Feed master starter and finisher, VF-S and -F= Vital feed starter and finisher, SJ-S and -F= Surry_j starter and finisher, DM= Dry Matter, CP= Crude Protein, CF= Crude Fibre, EE= Ether Extract, NFE= Nitrogen Free Extract, OM= Organic Matter

Table 2: Weekly average feedintake (g) fed four different commercial diets of broilers

Diet						
		N	I	II	III	IV
			*	*	*	*
Week						
1	16	72.00±0.03 ⁱ	51.20±0.03 ⁱ	57.40±0.25 ⁱ	58.00±0.25 ⁱ	
2	16	178.05±0.01 ^h	176.00±0.12 ^h	178.00±0.32 ^h	192.00±0.21 ^h	
3	16	756.01±0.00 ^g	794.01±0.03 ^g	802.01±0.03 ^g	802.01±0.00 ^g	
4	16	826.04±0.01 ^f	916.03±0.00 ^f	972.00±0.04 ^f	912.02±0.03 ⁱ	
5	16	996.03±0.06 ^e	1038.00±0.11 ^e	1030.01±0.04 ^e	1038.01±0.03 ^e	
6	16	1236.03±0.01 ^d	1214.03±0.01 ^d	1252.02±0.01 ^d	1182.01±0.01 ^d	
7	16	1600.06±0.15 ^c	1632.00±0.03 ^c	1604.02±0.03 ^c	1616.00±0.12 ^c	
8	16	1766.01±0.07 ^b	1820.02±0.04 ^b	1796.00±0.04 ^b	1786.01±0.12 ^b	
9	16	2362.00±0.11 ^a	2176.02±0.01 ^a	2212.01±0.04 ^a	2150.01±0.03 ^a	

N= Number of observations, *= $P<0.05$, I=Niger feed, II=Feed master, III=Vital feed, IV=Surrey-J feed

Note: Means with the same letter in the same column are not significantly different

Table 3: Weekly average weight gain/diet (g) of broilers fed four different commercial diets

		Diet				
		N	I	II	III	IV
Week			*	*	*	*
1	16		208.04±0.01 ⁱ	188.20±0.02 ⁱ	192.24±0.06 ^j	212.01±0.02 ^j
2	16		452.03±0.02 ^h	448.21±0.02 ^h	440.01±0.01 ^h	458.00±0.04 ^h
3	16		800.00±0.01 ^g	840.00±0.01 ^g	836.01±0.03 ^g	872.05±0.07 ^g
4	16		1216.03±0.05 ^f	1268.03±0.04 ^f	1202.01±0.04 ^f	1256.00±0.04 ^f
5	16		2388.04±0.10 ^e	2626.01±0.06 ^e	2412.04±0.01 ^e	1500.01±0.01 ^e
6	16		3126.05±0.11 ^d	3200.00±0.07 ^d	3188.01±0.06 ^d	3276.01±0.01 ^d
7	16		4238.04±0.20 ^c	4050.05±0.18 ^c	4212.01±0.11 ^c	4126.02±0.01 ^c
8	16		5150.03±0.21 ^b	4912.09±0.06 ^b	4788.03±0.12 ^b	4826.01±0.02 ^b
9	16		5550.04±0.22 ^a	5600.07±0.10 ^a	5538.02±0.14 ^a	5576.02±0.03 ^a

N= Number of observations, *= P<0.05, I=Niger feed, II=Feed master, III=Vital feed, IV=Surrey-J feed

Note: Means with the same latter in the same column are not significantly different

Table 4: Average feed intake and growth performance of broilers fed four different commercial diets (g)

		Diets				
Parameters	N	I	II	III	IV	SE
Feed intake (g)	96	2340	2340	2540	2580	40
Growth performance (g)	96	2480	2420	2360	2440	120
FCR		1880	1940	2160	2120	

N=Number of observation, SE=Standard error, I=Niger feed, II=Feed master, III=Vital feed, IV=Surrey-J feed, FCR= Feed Conversion Ratio

from week 1 to the 9th week. On diet I the first week, feed intake was recorded to be least (72.00±0.03g) and the 9th week to be the highest (1236.03±0.01g). On diet II, least intake was 51.20±0.03g and highest was 1214.03±0.01g, diet III, least was 57.40±0.25g and highest was 1252.02±0.01g while diet IV, the least intake was 58.00±0.25g and the highest was 1182.01±0.01g all in the first and the ninth week, respectively.

Average weekly broiler performance was recorded (Table 3). Like in the feed intake, the performance followed similar pattern of effect. Significant (P<0.05) average weekly performance was observed. Least and highest weight gain was observed on week one and the 9th week on all the diets. Diet I 208.04±0.01g and 5550.04±0.22g), diet II 188.20±0.02g and 5600.07±0.10g) diet III (192.24±0.06g and 5538.02±0.14g) and diet IV (212.01±0.02g and 5576.02±0.03g).

Table 4 contained the average feed intake and performance of broilers fed different commercial diets from day old to finishing at week 9. Significant (P<0.01) feed intake variability was observed on the different diets. Diet I (2340g) and diet II (2340g) were observed to be consumed significantly lower than diets III (2540g) and IV (2580g). The performance however could not show any variations on the diet consumed. Feed conversion ratio however indicated that diet I was consumed least (1880g) followed by diet II (1940g), then diet IV (2160g) while diet III was consumed highest (2120g).

The proximate chemical analysis of the four diets indicated a crude protein range of the starter feed from 21.01CP in Vital feed to 25% CP in Surrey J feeds. The finisher feed however contained a crude protein

ranges from 19.20%CP in Vital feed to 22%CP in Surrey J feed.

DISCUSSION

In support this findings are the report of Bamgbose and Tewe, [7] who recommended 23 and 19% CP levels for starter and finisher, Kekeocha, [5] crude protein levels of 23%CP for starter and 20%CP for finisher [8]. Bashir and Abubakar [9] reported that surplus protein beyond those required for optimum growth of broilers needs additional supplementation with methionine which should not be less than 0.25% of dietary protein concentration.

The significant (P<0.05) weekly feed intake recorded on the diets (Table 2) might be an indication of weekly growth and development of the birds, which agreed with the findings of Sizemore and Siege [10] who reported that well fed broilers tends to grow on daily bases only when there is sign of ill health or poor management. Significant (P<0.05) weekly growth performance (Table 3) was evident on all the diets which might be the respond to good management which includes feeding of good feeds and well being of the birds [11]. Significant (P<0.05) feed intake variation was observed among the four commercial diets (Table 4) could be an attribute to the lower fiber content of the diet I and II as shown in the proximate analysis of these diets. Feed conversion ratio of these also supported the claim of diets III and IV being consumed higher than diets I and II in compensation for the lower fiber content for growth and development of the birds.

It was concluded that Niger feeds, Feed master, Vital feed and Surrey J feed are similarly good for broiler production in Mubi and that all the four feeds being common in the area are recommended for farmers use. Feed mill industries are advised to be producing feeds of good quality as such research is also being recommended to be staged from time to time by animal scientists to check for the uncertainty of some feed millers.

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