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**THEME: EMERGING CHALLENGES
FACING ANIMAL AGRICULTURE
IN NIGERIA AND THE WAY FORWARD**

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GROWTH PERFORMANCE NUTRIENT DIGESTIBILITY AND COST/BODY WEIGHT GAIN ANALYSIS OF GUINEA FOWL KEETS FED VARYING INCLUSION LEVELS OF BOILED *Senna occidentalis* MEAL.

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ABSTRACT

A total of one hundred and twenty guinea fowl keets were used in the experiment. The birds were randomly divided into 4 treatment groups. Boiled *Senna occidentalis* meal (MSOM) was included at 0.0%, 6.5%, 13.0% and 19.5% and designated as T1, T2, T3 and T4 respectively. Significant differences ($P < 0.05$) were observed in all the parameters measured, which included feed intake, final weight, FCR, water intake, protein efficiency ratio, energy efficiency ratio and feed cost/weight gain. Although the cost of feed/kilogram tends to decrease as the inclusion level of MSOM increases this does not translate into higher weight gain but rather the feed cost/body gain tends to increase, from the result of the experiment, boiled *Senna occidentalis* meal tends not to have positive effect on the growth performance of guinea fowl keets.

Keywords: Guinea fowl keets, Boiled *Senna occidentalis* meal, feed cost/body weight gain.

INTRODUCTION

There is ever increasing demand for animal protein in developing countries, because what is obtained from the major sources of meat supply are inadequate. The protein consumption in Nigeria is about 27% less than the minimum requirement of 35g. Ayanwale (2006) advocated an increase in production of monogastric animal to be able to meet this requirement, because of their shortage generation intervals. The wild tropical guinea fowl have a number of advantage over exotic counterparts, The major problem against large animal production is naturally related to high cost of feedstuff, therefore, there is need to search for alternative feed sources that will actually cost less, thus, the choice of *Senna occidentalis*; whose raw seeds contained 15-19.5% crude protein and energy value of 3550 kcal/kg Yakubu (2008)

MATERIALS AND METHODS

The guinea fowl eggs were collected from Fulani, and were incubated the methods described by Nwagu (1997) the seeds were processed using the methods of Omoikloji *et al.* (2008). The Boiled *Senna occidentalis* (BSOM) were used to 4 prepare experimental diet T1 0%, diet T2 6.50%, diet T3 13.70% while T4 contains 19.50% BSOM respectively.

Table 1. The keets were fed for period of 10 weeks. The performance is shown in table 2, the result nutrient digestibility is reported in table 3

RESULT AND DISCUSSION

The result on the growth performance revealed that all the parameters investigated varied significantly ($P < 0.05$) the differences were observed in the final weight this might be attributed to increasing levels of BSOM, this is reflected in their protein efficiency ratio, might be attributed to passage of digesta through gastrointestinal tract, which tend to affect feed intake (Mwale, *et al.*, 2008). Adeyamo *et al.* (2004) had reported similar trend in guinea fowl in FCR in guinea fowl. The result of nutrient digestibility indicated that DM, CP and CF were poorly digested, Dahonde *et al.* (2009) had reported poor levels of digestion of CP generally in legumes diets in guinea fowls, however, the energy utilization had no significance difference among the treatments except the diet containing 19.5% BSOM. The feed cost/body weight gain increases, indicating that the birds will consume more to produce a kilogram of live body weight, this agreement with Augustine *et al.* 2010.

CONCLUSION

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Although formulating an isocaloric and isonitrogenous feed for guinea fowl keets tends to reduce cost/kg feed, it tends to influence the growth of the birds negatively, indicating that BSOM cannot be used for feeding guinea fowls at starter phase.

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Table 1. Composition and calculated nutrient content of experimental diets (%) containing boiled *Senna occidentalis* meal at starter phase

Ingredients (%)	Levels of boiled <i>Senna occidentalis</i> seed meal (%)			
	T1	T2	T3	T4
	0.00	6.50	13.00	19.50
Maize	44.70	39.79	35.07	30.37
GNC	41.70	40.11	38.33	36.53
BSOM	0.00	6.50	13.00	19.50
Maize bran	5.00	5.00	5.00	5.00
Fish meal	4.00	4.00	4.00	4.00
Bone meal	2.50	2.50	2.50	2.50
Red oil	0.30	0.30	0.30	0.30
Lysine	1.10	1.10	1.10	1.10
Methionine	0.45	0.45	0.45	0.45
*Premix	0.25	0.25	0.25	0.25
TOTAL (g)	100.00	100.00	100.00	100.00
Calculated nutrients				
Energy Kcal/kgME	2995.00	2932.70	2944.00	2958.00
Crude protein(%)	25.91	25.99	26.00	25.99

*To provide the following per 100kg of the diet: 440mg, riboflavin; 720mg calcium pantothenate; 2g, niacin; 2,2g chloride; 15mg folic acid; 1mg vitamin B12; 15mg retinol; 165g vitamin D2; 1000mg DL-tocopherol acetate; 1700mg copper; 200mg iodine; 3000mg manganese; 5000mg zinc; 10,000mg iron.

KEY GNC- Groundnut cake; BSOM- Boiled *Senna occidentalis* meal

Table 2. Performance of Guinea fowl keets fed graded level of boiled *Senna occidentalis* at starter phases

Parameters	levels of boiled <i>Senna occidentalis</i> seed meal (%)				SEM	LS
	T ₁	T ₂	T ₃	T ₄		
	0.0	6.50	13.00	19.50	32.23	Ns
Starter Initial weight(g)	31.96	32.01	32.68	32.85	37.47	**
Final starter weight(g)	776.82 ^a	637.88 ^b	530.18 ^c	444.39 ^c	60.74	**
Feed intake(g)	3098.00 ^a	2984.00 ^{ab}	2683.00 ^{ab}	2615.00 ^b	37.52	**
Weight gain(g)	774.86 ^a	605.87 ^b	497.50 ^c	411.54 ^d	0.79S	**
FCR	4.16 ^a	4.93 ^b	5.39 ^c	6.36 ^d	399.70	**
Water intake (ml)	3207.00 ^a	2692.00 ^b	2484.00 ^{bc}	2276.00 ^c	0.12	**
PER	0.95 ^a	0.88 ^c	0.91 ^b	0.64 ^d	0.15	**
EE	0.08 ^a	0.07 ^a	0.08 ^a	0.05 ^b	0.51	**
Cost/feed (₦/Kg)	92.71 ^a	91.25 ^a	89.73 ^b	88.21 ^b	18.76	**
Feed cost/wt.gain (₦/kg)	385.84 ^a	448.78 ^b	483.40 ^c	560.58 ^d		**

a,b,c,d : means in the same row with different letters are statistically different (P<0.05)
 **: significant, LS : Level of significance. ns : non significant (P>0.05), SEM : Standard Error of the mean. FCR : Feed conversion ratio. PER : Protein efficiency ratio. EE : Energy efficiency ratio.

Table 3. Nutrient digestibility at starter phase of guinea fowls fed boiled *Senna occidentalis* meal

Nutrients (%)	Levels of boiled <i>Senna occidentalis</i> meal (%)				SEM	LS
	T ₁	T ₂	T ₃	T ₄		
	0.00	6.50	13.00	19.50		
Starter Dry matter	60.19 ^a	53.48 ^b	56.59 ^{ab}	57.76 ^{ab}	3.51	**
Crude protein	81.84 ^a	58.36 ^b	53.54 ^c	54.97 ^c	12.06	**
Crude fibre	47.81 ^a	41.48 ^{ab}	48.96 ^a	28.76 ^c	11.04	**
Ether extract	32.27 ^b	57.11 ^a	65.53 ^a	62.29 ^a	14.191	**
Ash	37.87 ^c	61.62 ^b	67.89 ^a	59.29 ^b	3.42	**
NFE	60.68 ^d	69.04 ^c	72.83 ^b	78.29 ^a	6.76	**