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Feed Intake, Body Weight, Average Daily Gain, Feed Conversion Ratio and Carcass Characteristics of Helmeted Guinea Fowl Fed Varying Levels of *Phane* Meal (*Imbrasia belina*) as Replacement of Fishmeal under Intensive System

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Abstract: The objective of this study was to investigate the effect of feeding varying levels of *Phane* meal (*Imbrasia belina*) as a protein source on feed intake, body weight, average daily gain, feed conversion ratio and carcass characteristics of guinea fowl under intensive system up to 13 weeks of age. A total of 96 day old keets were randomly allocated to 4 treatment diets, which were replicated 4 times (n = 6/replicate). Dietary inclusion levels of *Phane* meal were 4.5%, 9% and 13.5% while control diet contained 3% fishmeal. Parameters measured were Feed Intake (FI), Body Weight (BW) and carcass dressed weight, Average Daily Gain (ADG), dressing percentage, Feed Conversion Ratio (FCR), carcass dressed weight and dressing percentage. The present results showed that FI increased significantly ($p<0.05$) with age. Dietary treatment did not affect FI. There was no significant difference for ADG among treatments, however, guinea fowl fed control diet had higher ADG (0.0138±0.0003 kg) and lower FCR (3.83) than birds on 4.5% *Phane* diet which had FCR of 4.09. Body weight increased significantly ($p<0.05$) with age. However, dietary treatment had no significant effect on BW at week 13 (slaughter age). Birds on control diet had significantly higher carcass dressed weight compared to other treatments. Female and male birds fed control diet had significantly higher dressing percentage (75.82±2.99 and 74.10±2.99%, respectively) compared to other treatments but dressing percentage of female and male birds on 4.5% Phane diet did not differ. These results suggested that *Phane* meal can be included in guinea fowl diets up to 4.5% without affecting growth.

Key words: Body weight, carcass characteristics, FCR, feed intake, guinea fowl, *Phane*

INTRODUCTION

Guinea fowl are thought to have originated in Africa and their production has increased rapidly throughout the entire world (Yildrim, 2012). In the opinion of Oke *et al.* (2012), indigenous guinea fowl is one of the promising species of poultry which systematic studies are limited. Its attractive plumage and value as a table bird with game-type flavour and high meat to bone ratio have led to its worldwide acceptance (Embury, 2001). Unlike chicken eggs, consumption of guinea fowl eggs is not popular, thus most guinea fowl are raised for meat which is served in restaurants around the world, especially as substitutes for game birds. Mwale *et al.* (2008) reported that guinea fowl have low input requirements, greater capacity to scavenge for feed and high meat quality. However, the greatest challenge is the establishment of optimum nutrient requirements for guinea fowl and the design of feeding schemes that will maximize growth and minimize the cost of production (Nahashon *et al.*, 2005).

Intensive livestock production has resulted in price increases of the conventional poultry feed resources; especially protein sources (Mwale *et al.*, 2008). Therefore, research on low-cost and locally available indigenous feed resources is fundamental. One such potential alternative is the use of *Phane (Imbrasia belina)*. *Phane* contains about 50% crude protein (Siame *et al.*, 1989; Madibela *et al.*, 2007) and is abundant in the wilderness during its season of availability. *Phane* is a seasonal product and the main harvesting period in Botswana usually starts in late December and lasts for about three weeks. Depending on the availability of rain, a second small crop may also be expected from April to May (Mareko *et al.*, 2010). According to Sekhwela (1989) and Ohiokpehai *et al.* (1996), processed *Phane* is high in protein (55-57%) and lipids (14-17%). The essential amino acids profile of *Phane* was determined by Ohiokpehai *et al.* (1996) and was found to be comparable to soya bean and fishmeal. *Phane* contains greater concentrations of threonine, valine, phenylalanine, tryptophan than soya bean or fishmeal. Lysine and methionine levels in *Phane* are comparable to fishmeal.

In Botswana, yellow maize, sunflower and soya bean meal are the major ingredients in poultry feeds as sources of protein. However, none of these crops are grown commercially in the country. Botswana has no fish industry to produce fishmeal resulting in this product being imported at high prices. The imported poultry feed tends to be expensive leading to farmers realizing low profit margins. As a result, it is important to study the performance of guinea fowl fed *Phane* meal and other

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local based feeds. The objective of the study was to investigate the effect of feeding varying levels of *Phane* meal (*Imbrasia belina*) as a protein source on feed intake, average daily gain, feed conversion ratio (FCR), body weight, carcass dressed weight and carcass dressing percentage of guinea fowl under intensive system from day 1 to 13 weeks of age.

MATERIALS AND METHODS

Study area: The study was conducted at the Botswana College of Agriculture (BCA) guinea fowl unit, Sebele, Gaborone. This site is at an altitude of 994 m and the coordinates are latitude 24° 34'S and longitude 25° 57'E. Monthly average minimum and maximum temperatures are 12.8°C and 28.6°C, respectively. The mean annual rainfall is 500 mm (Animal Production Research Unit, 1999-2001).

Study period: The study commenced in February and ended in June 2011.

Experimental design: A factorial in a completely randomized design was used where diets containing *Phane* meal at inclusion levels of 4.5%, 9%, 13.5% and a control diet of fishmeal at inclusion level of 3% were randomly assigned to four groups of six keets each. The treatments were replicated four times. The keets were balanced for weight during treatment allocation.

Data collection

Animal management: Two hundred guinea fowl eggs were obtained from a guinea fowl unit at BCA and incubated for 28 days in an automatic incubator at a temperature between 37°C and 37.5°C and a relative humidity of 55 to 60%. After hatching, 24 keets were each balanced for weight and randomly allocated to the control diet and three other treatment diets. At the end of week 1, keets were tagged for identification and brooded under deep litter system for two weeks. Thereafter, they were transferred to the rearing unit where each treatment diet was further replicated four times. Each replicate had six keets in a 180 cm x 200 cm pen. The guinea fowl were raised in a deep litter system with wood shavings spread on the floor of the house. The area surrounding the rearing unit was fenced and footbath containing formalin was placed at the entrance. Keets were vaccinated against Newcastle disease and Gumboro at two weeks of age using ND Clone 9 and Gumboro vaccines, respectively. The vaccines were administered orally.

Diets: Keets were given starter diet with 24% Crude Protein (CP) in all the diets up to six weeks of age. From 7 to 13 weeks, guinea fowl were given finisher diet with 17% CP in all the diets. Diets and water were given *ad libitum* throughout the experimental period. The chemical analyses of experimental diets were performed according to the methods of Association of Official Analytical Chemists (AOAC) (1996). The experimental diets (starter and finisher) were isonitrogenous and isocaloric. Experimental diets are given in Tables 1 and 2.

Feed intake, body weight and feed conversion ratio: Feed intake (FI) was measured weekly and body weight (BW) every two weeks. Feed intake was

Table 1: Nutrient composition of experimental diets fed as guinea fowl starter from 0-6 weeks of age under intensive system

	Fishmeal	Phane meal		
Treatments	Control	1	2	3
Inclusion levels (%)	3%	4.5%	9%	13.5%
Ingredients	Amount in kg			
Yellow maize (9%)	46.29	46.64	49.29	51.91
Soya bean meal (38%)	46.61	44.76	37.61	30.49
Fishmeal (60%)	3.00	-	-	-
Phane meal (55%)	-	4.50	9.00	13.50
Dehydrated alfalfa (16%)	2.00	2.00	2.00	2.00
Dicalcium phosphate	0.35	0.35	0.35	0.35
Vitamin/Mineral premix*	1.50	1.50	1.50	1.50
Iodized salt	0.25	0.25	0.25	0.25
Total	100.00	100.00	100.00	100.00
Proximate analysis				
Dry matter (%)	86.19	87.22	88.42	85.30
Moisture (%)	13.81	11.78	11.58	14.70
Crude protein (%)	24.96	24.88	24.56	24.54
Crude fibre (%)	2.44	2.76	2.98	3.06
Crude fat (%)	5.34	6.32	5.33	7.61
Ash (%)	5.55	5.95	5.53	5.56
NFE (%)	47.90	47.31	50.02	44.53
Metabolizable energy (MJ/kg)	15.77	15.35	16.43	15.48

*Provided per kg of diet: 12,500 IU Vit A; 1,500 IU Vit D_3; 30 mg Vit E; 2.5 mg Vit K; 1.5 mg Vit B_1; 5 mg Vit B_2; 2 mg Vit B_6; 15 mg Vit B_{12}; 10 mg D-Pantothenate; 0.75 mg Folic acid; 0.10 mg D-Biotin; 300.00 mg Choline chloride; 150 mg Mn; 50 mg Fe; 75 mg Zn; 5 mg Cu; 1.5 mg I; 0.2 mg Co and 0.1 mg Se

Table 2: Nutrient composition of experimental diets fed as guinea fowl finisher from 7-13 weeks of age under intensive system

	Fishmeal	Phane meal		
Treatments	Control	1	2	3
Inclusion levels (%)	3%	4.5%	9%	13.5%
Ingredients	Amount in kg			
Yellow maize (9%)	70.41	70.79	73.41	76.06
Soya bean meal (38%)	22.49	20.61	13.49	6.34
Fishmeal (60%)	3.00	-	-	-
Phane meal (55%)	-	4.50	9.00	13.50
Dehydrated alfalfa (16%)	2.00	2.00	2.00	2.00
Dicalcium phosphate	0.35	0.35	0.35	0.35
Vitamin/Mineral premix*	1.50	1.50	1.50	1.50
Iodized salt	0.25	0.25	0.25	0.25
Total	100.00	100.00	100.00	100.00
Proximate analysis				
Dry matter (%)	89.43	88.14	88.51	88.33
Moisture (%)	10.57	11.86	11.49	11.67
Crude protein (%)	17.54	17.24	17.05	17.67
Crude fibre (%)	3.22	3.55	4.01	4.23
Crude fat (%)	9.83	7.63	7.43	9.42
Ash (%)	6.87	6.69	7.73	7.01
NFE (%)	51.97	53.03	52.29	50.00
Metabolizable energy (MJ/kg)	14.24	13.96	14.82	13.85

*Provided per kg of diet: 12,500 IU Vit A; 1,500 IU Vit D_3; 30 mg Vit E; 2.5 mg Vit K; 1.5 mg Vit B_1; 5 mg Vit B_2; 2 mg Vit B_6; 15 mg Vit B_{12}; 10 mg D-Pantothenate; 0.75 mg Folic acid; 0.10 mg D-Biotin; 300.00 mg Choline chloride; 150 mg Mn; 50 mg Fe; 75 mg Zn; 5 mg Cu; 1.5 mg I; 0.2 mg Co and 0.1 mg Se

determined as the difference between the amount of feed offered and refusals. Feed Conversion Ratio (kg feed/kg gain) was calculated by dividing FI with BW gain (Mwale *et al*., 2008). The FCR was determined at end of the study.

Dressed weight and dressing percentage: The carcasses were air dried approximately two hours after removal of viscera and thereafter weighed. The final live weights and carcass weights were used to determine the dressing percentage of the birds, expressed as: (carcass weight/final live weight)*100.

Statistical analysis: Data were analyzed using General Linear Model (GLM) of Statistical Analysis System (SAS) (SAS Institute, 2002). The reported Least Square Means were separated using Least Significant Differences (t-test). The following statistical model was used:

$$Y_{ijkl} = \mu + T_i + S_j + (T_i*S_j) + E_{ijk}$$

Where Y_{ijk} = Mean body weight, growth rate, feed intake, feed conversion ratio, average daily gain, carcass weights and dressing percentage from 0 to 13 weeks, μ = The overall mean; T_i = Effect of ith treatment diet, S_j = Effect of sex, (T_i*S_j) = The interaction between treatment feed and sex of guinea fowl; E_{ijk} = The random error associated with the ijk record. Differences were considered significant when $p<0.05$.

RESULTS AND DISCUSSION

Feed intake: Feed intake of keets increased significantly ($p<0.05$) with age in all treatments (Table 3). Increase in feed intake as birds grew is due to the increasing demand for protein and energy needed for growth (Mwale *et al*., 2008). In this study, dietary treatments did not significantly influence FI. However, keets fed control diet tended to have higher FI compared to the rest of the treatments. Feed intake increased significantly ($p<0.05$) during the finisher phase (7-13 weeks). However, there was no significant difference of FI during this period among treatments. Although there was no significant difference in FI, guinea fowl fed 4.5% and 9% *Phane* diets tended to have higher FI compared to those fed 13.5% *Phane* and control diets (Table 3).

The increase in FI as birds grew is consistent with Nsoso *et al*. (2008) who reported 200 g/week/bird consumed by keets between 2 to 3 days of age and 550 g/week/bird consumed by birds at 42 days of age when fed commercial starter and grower diets. Similarly, Mwale *et al*. (2008) also found that FI of keets increased with age from 1 to 6 weeks. The authors recorded higher FI of 17.48 g/keet/day when they fed commercial diet containing 25.5% CP and lower FI of 14.73 g/keet/day when feeding a commercial diet containing 25.5% CP plus 10% baobab seed cake from 1 to 6 weeks of age. The authors attributed low FI during the early growth stages to the under-developed gastro-intestinal tract and adaptation of keets to the new feed. Furthermore, Mwale *et al*. (2008) reported that the digestibility of nutrients in

Table 3: Feed intake, average daily gain and FCR of guinea fowl fed varying levels of *Phane* meal and control diet using fishmeal under intensive system

	LSMean±SE			
Parameters	3% Fishmeal	4.5% *Phane* meal	9% *Phane* meal	13.5% *Phane* meal
FI/keet/day(g) Phase 1 0-6 weeks	13.6200±0.1670^{ax}	13.5800±0.1670^{ax}	13.6000±0.1670^{ax}	13.4500±0.1670^{ax}
FI/keet/day(g) Phase 2 7-13 weeks	75.2700±0.6500^{ay}	76.2700±0.6500^{ay}	76.9200±0.6500^{ay}	74.3300±0.6500^{ay}
ADG (kg)	0.0138±0.0003^{a}	0.0128±0.0003^{a}	0.0133±0.0003^{a}	0.0129±0.0003^{a}
Total FI/keet/(kg)	4.2050±0.1250^{a}	4.2240±0.1250^{a}	4.2180±0.1250^{a}	4.1130±0.1250^{a}
FCR	3.83	4.09	3.94	3.96

^{ab}Means in the same row with different superscripts in a row differ significantly; p<0.05.
^{x,y}Means in the same column within a parameter with different superscripts differ significantly; p<0.05.
LSMean: Least Square Means, SE: Standard Error, FI: Feed Intake, ADG: Average Daily Again, FCR: Feed Conversion Ratio

young poultry increases with age, indicating that guinea fowl increase their FI to meet protein and energy requirement for growth and development. Salez and Preez (1997) recommended a guinea fowl diet of 24% CP and 12.5 MJ/kg ME up to 8 weeks of age. Veldkamp *et al.* (2005) noted that FI decreases linearly as dietary energy increases. Also, Nahashon *et al.* (2005) noted that as dietary energy increases, birds satisfy their energy needs by decreasing FI.

In the current study, guinea fowl fed 13.5% *Phane* diet had lower total FI compared to other treatments (Table 3). As *Phane* meal increased in the diet, total FI reduced suggesting that *Phane* diets at higher levels become unpalatable resulting in birds reducing their FI. The availability of chitin in *Phane* diet makes it unpalatable at higher levels leading to reduced FI. Seabo *et al.* (2011) reported higher total FI between 6.27 to 6.02 kg per guinea fowl from 6 to 12 weeks of age when fed a commercial grower diet. Furthermore, Adeyemo and Oyejola (2004) reported higher total FI between 5.28 to 6.04 kg when they fed 5 week old guinea fowl varying levels of poultry droppings as a protein source in a 30 weeks feeding trial.

Average daily gain: Although, guinea fowl on control diet had higher ADG, this did not differ significantly from those fed 4.5%, 9% and 13.5% *Phane* diets (Table 3). Saina (2005) reported lower ADG value of 0.008 kg for guinea fowl kept under intensive system, fed broiler phase 2 diet containing 18% CP and 13 MJ of ME/kg DM and ADG value of 0.0123 kg for guinea fowl kept under semi extensive system that scavenged on household refuse and were on free range and housed over night.

Feed conversion ratio: Guinea fowl fed 4.5% *Phane* diet and the control diet had the highest and lowest FCR values, respectively (Table 3). Higher FCR (4.09) observed for guinea fowl on 4.5% *Phane* diet in this study could be attributed to higher FI (Table 3). Lower FCR (3.96) observed for birds on 13.5% *Phane* diet could be attributable to the availability of chitin in *Phane* diet which becomes unpalatable at higher levels leading to reduced FI. The FCR values in this study are closer to those of Bell and Smith (2006) who reported that guinea fowl have a FCR of 4:1 to 4.5:1. Recently, Seabo *et al.* (2011) reported higher FCR of 6.37 to 6.71 when feeding commercial grower diet from 6 to 12 weeks of age under intensive system. The differences in FCR values between present and previous results could be due to age, different diets fed, management regime and also environmental factors. Mwale *et al.* (2008) noted that decreasing FCR with age could be due to increasing feed quantities needed for growth. Nwagu and Alawa (1995) noted that the wildly behaviour of guinea fowl; the characteristic timid, but very active, flighty and noisy temperament contribute to poor FCR through high energy output.

Body weight: Body weight increased significantly with age in all treatments (Table 4). Nsoso *et al.* (2008) contended that increase in body weight represents growth and development of farm animals. Compared to guinea fowl fed *Phane* diets, those fed control diet tended to have higher BW throughout the study period (Table 4). Keets had the same weight across all treatments at week 0 (Table 4). Nsoso *et al.* (2008) recorded lower BW of keets at five days of age (0.022 to 0.0225 kg). Keets on control diet had significantly higher BW at week 1 compared to those fed 9% *Phane* diet. Similarly, Mwale *et al.* (2008) reported lower BW for keets aged one week old (0.0275 to 0.028 kg). Body weight for keets on control, 4.5%, 9% and 13.5% *Phane* diets did not differ significantly from 8 to 13 weeks of age. However, keets fed 13.5% *Phane* diet tended to have lower BW throughout the study period compared to other treatments. This finding could be attributable to the presence of chitin, a component or the outermost part of the worm, which forms 27% of the dry weight (Sekhwela, 1989; Ohiokpehai *et al.*, 1996). Mahata *et al.* (2008) reported that chitin physically blocks the access of digestive enzyme to hydrolyze protein and lipid, thus affecting the utilization of these nutrients. It appears that high inclusion level of *Phane* meal in the diet has detrimental effect on the growth of keets during early growth stages. In a similar experiment, Mareko *et al.* (2010) also found that broilers fed diets containing 40% *Phane* had significantly lower BW (0.722±0.103 kg) than those fed 20% *Phane* (0.859±0.169 kg) and 0% *Phane*

Table 4: Body weight of guinea fowl fed varying levels of *Phane* meal and control using fishmeal under intensive system

	Body weight (kg) LSMean±SE			
Age (weeks)	Control 3% Fishmeal	Treatment 1 4.5% *Phane* meal	Treatment 2 9% *Phane* meal	Treatment 3 13.5% *Phane* meal
0	0.031±0.001[a]	0.032±0.001[a]	0.032±0.001[a]	0.031±0.001[a]
1	0.051±0.003[a]	0.044±0.002[ab]	0.043±0.003[b]	0.048±0.002[ab]
2	0.082±0.003[a]	0.076±0.003[ab]	0.077±0.003[ab]	0.066 ±0.003[b]
4	0.125 ±0.004[a]	0.120 ±0.004[a]	0.120 ±0.004[a]	0.116±0.004[a]
6	0.399±0.014[a]	0.397±0.014 [a]	0.379±0.015[a]	0.354 ±0.015[b]
8	0.479±0.017[a]	0.488±0.017[a]	0.468±0.017[a]	0.445±0.017[a]
10	0.709±0.021[a]	0.699 ±0.021[a]	0.688±0.022[a]	0.667±0.022[a]
12	1.043±0.031[a]	0.956±0.031[a]	0.952 ±0.032[a]	0.952±0.032[a]
13	1.129±0.025[a]	1.065±0.025[a]	1.102 ±0.026[a]	1.069±0.026[a]

[ab]Means in the same row with different superscripts in a row differ significantly; p<0.05. LSMean: Least Square Means, SE: Standard Error

Table 5: Performances of guinea fowl fed varying levels of *Phane* meal and control using fishmeal under intensive system slaughtered at 13 weeks of age

		LSMean±SE			
Parameters	Sex	Control diet (3% Fishmeal)	4.5% *Phane* meal	9% *Phane* meal	13.5% *Phane* meal
Final live weight (kg)	Female	1.156±0.035[ax]	1.047±0.035[ax]	1.098±0.038[ax]	1.086±0.032[ax]
	Male	1.103±0.035[ax]	1.084±0.035[ax]	1.106±0.035[ax]	1.051±0.041[ax]
Carcass dressed weight (kg)	Female	0.870±0.027[ax]	0.761±0.027[ax]	0.654±0.030[bx]	0.724±0.025[abx]
	Male	0.811±0.027[ax]	0.786±0.027[ax]	0.655±0.027[bx]	0.696±0.031[bx]
Dressing (%)	Female	75.820±2.990[ax]	72.740±2.990[ax]	61.110±3.280[bx]	67.130±2.770[abx]
	Male	74.100±2.990[ax]	72.550±2.990[ax]	60.470±2.990[bx]	66.790±3.460[abx]

[ab]Means in the same row with different superscripts in a row differ significantly; p<0.05.
[x,y]Means in the same column within a parameter with different superscripts differ significantly; p<0.05.
LSMean: Least Square Means, SE: Standard error

(1.512±0.156 kg) at six weeks of age. The authors explained that this could be due to the *Phane* supplement which became unpalatable at higher amounts and therefore limited feed consumption.

Generally, birds fed control diet tended to have higher BW compared to those fed *Phane* diets. Seabo *et al.* (2011) reported slightly higher BW of guinea fowl of 1.21 to 1.47 kg at 12 weeks of age when they fed a diet containing 14 to 18% CP. In agreement with the current results, Nsoso *et al.* (2008) reported that guinea fowl tend to grow slowly, weighing 0.346 to 0.394 kg at 6 weeks. In this study, at six weeks of age average BW of keets fed treatments diets was 0.385±0.69 kg. At 12 weeks of age, average BW of keets fed treatments diets was 0.977±0.153 kg. On the other hand, Saina (2005) reported lower BW (807±17.24 g and 591±18.03 g) at 12 weeks of age under intensive and semi-extensive systems, respectively. Ayorinde *et al.* (1988) stated that low live weight is a characteristic of guinea fowl. It is suggested (CAB International, 1987) that low BW and body structure of guinea fowl suited for rapid flight and fast running are evolutionary adoptions for survival in the wild and that nature has selected against heavy weight or plumpness.

Carcass characteristics: Dietary treatments did not significantly influence final live weight of males at slaughter. However, females tended to have higher live weights than males, but statistically they did not differ (Table 5). Nahashon *et al.* (2005) observed that males are generally heavier than females. The authors reported higher values compared to the current study of 1.263±130.04 and 1.239±140.81 kg of live weights for males and female, respectively at 13 weeks of age.

The carcass dress weight of males on control diet did not differ significantly (p>0.05) from the males fed 4.5% *Phane* meal suggesting that *Phane* meal could replace fishmeal at this level. Furthermore, the carcass dressed weight of males fed control diet was significantly different from those fed 9% and 13.5% *Phane* diets. Dietary treatment had effect on carcass dressed weight of females. The carcass dressed weight of females fed control diet were significantly higher than those fed 9% *Phane* diet but did not differ from female birds fed 4.5% and 13.5% *Phane* diets (Table 5). Mareko *et al.* (2006) found higher carcass dressed weight (1.056±0.087 and 1.015±0.096) for guinea fowl raised under concrete and earth floors at 12 weeks of age. The authors also found higher carcass dressed weight (0.949±0.050 and 1.081±0.091) for guinea fowl raised under concrete and earth floors at 14 weeks of age.

The dressing percentage of females fed control diet and 4.5% *Phane* diet were significantly higher than those fed 9% *Phane* diet but did not differ from those fed 13.5% *Phane* diet (Table 5). Males fed 9% *Phane* diet recorded significantly lower dressing percentage (60.47±2.99%)

compared to those fed control diet and 4.5% *Phane* diet. Females tended to have higher dressing percentage than males (Table 5). However, the guinea fowl dressing percentages in this study are lower than those reported by Mareko *et al*. (2006) who found 94.64±0.745% and 94.17±0.550% for guinea fowl kept under earth and concrete floor, respectively at 12 weeks of age. Adeyemo and Oyejola (2004) in Nigeria also reported higher dressing percentages between 85.6% and 87.4% when poultry droppings was fed to five week old guinea fowl pullets in a 30 weeks feeding trial. Mareko *et al*. (2006) suggested that carcass dressing percentage is influenced by the stage of maturity, degree of finish, breed and the intestinal contents (offals). These factors could have resulted in lower dressing percentage for the birds fed 9% and 13.5% *Phane* diets in the current study.

Conclusion: Dietary treatments did not significantly influence FI of guinea fowl throughout the study period suggesting that *Phane* meal can be included in guinea fowl diets. However, FI intake increased significantly during the finishing stage (7-13 weeks). During this period, FI intake of birds on 9% *Phane diet* tended to be higher than for birds on 13.5% *Phane* diet. Body weight increased significantly with age. Dietary treatments did not significantly influence body weight and average daily gain among treatments. Birds fed control diet had lower FCR compared to those fed 4.5% *Phane* diet, which had higher FCR. Guinea fowl fed control diet had significantly higher dressing percentage than guinea fowl on diets containing *Phane* meal. The lower dressing percentage in guinea fowl fed *Phane* diets could be attributable to chitin, which has detrimental effect on digestibility leading to lower BW. Further research should be conducted to evaluate the effects of *Phane* meal between 4.5 and 9% on performance of guinea fowl. Additionally, the economic viability of substituting *Phane* meal in guinea fowl diets should also be investigated.

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