

GROWTH PERFORMANCE AND COST OF FEEDING WEANED RABBITS (*Oryctolagus cuniculus*) GRADED LEVELS OF OVEN DRIED POULTRY DROPPINGS DIET

H. IBRAHIM, O. O. EGBEWANDE, A. B., MUSA, G. I. LAPAI, I. B. JATAU AND
A. YANDALU

¹Department of Animal Production, Faculty of Agriculture, Ibrahim Badamasi Babangida University,
Lapai, Niger State, Nigeria

Correspondence: ihadiza080@gmail.com

ABSTRACT

Thirty six weaned composite rabbits aged 5 -6 weeks were used to investigate the growth performance and cost of feeding rabbits graded levels of poultry droppings. The rabbits were randomly assigned to four dietary treatments with three replicates and three rabbits per replicate in the ratio of 2;1 (2 females and 1 male) in a completely randomized design (CRD). Data collected were subjected to Analysis of Variance (ANOVA) In the feeding trial, oven dried poultry droppings meal were incorporated at 0, 20, 40 and 60% levels of inclusion to replace ground nut and designated as T1, T2, T3 and T4. Results obtained for growth performance showed no significant ($P>0.05$) differences across the treatment groups. However highest average feed intake was recorded in T2(40 %) inclusion level 473.60 g and the lowest in T3 (40 %) of 458.80 g. The result of cost of feeding revealed that as the inclusion level of oven dried poultry increase the cost of feeding rabbits reduces and that goes down to decrease cost rabbit production. The trial revealed that oven dry poultry dropping can be used at 40 % level of inclusion in the rabbit diet without posing any threat to the animal,

Keywords; Rabbit farmers, livestock feed millers, animal scientists. poultry droppings, researchers.

INTRODUCTION

The inclusion of alternative feedstuffs in animal diets might be interesting in some circumstances (relative price, feed quality), but It's limited because of the lack of information on their nutritive value. The advantage of rabbits in Nigeria as source of animal protein has been identified (Amaefule *et al.*, 2004). Domestic rabbit is raised as a cheap source of meat for reasons of economy of feeding, high prolificacy (Cheeke, 1986) and small body size that makes it suitable for backyard rearing and easy consumption by a family. Rabbits could be produced using inexpensive and renewable resources such as garden "wastes" and by-products of grains (Lukefahr, 2009). Rabbits are able to thrive on non-conventional feedstuffs (Omole, 1982; 1988) with their utilization of large forage diets limited as a result of post gastric fibre digestion in the caecum (Belenguer *et al.*, 2008). Caecal microorganisms are able to convert nutrients leaving the small intestine to volatile fatty acids (VFAs), gases (CH₄, CO₂, H₂), ammonia and compounds incorporated into microbial cells. As such, rabbits require concentrate feed, although they could manage

high crude fibre levels (14-25%) in the diet (Adegbola *et al.*, 1985).Rabbit's

This is the case with oven dried poultry droppings, a waste product of poultry as a supplement feed in the diet. Poultry dropping is a mixture of poultry excreta, spilled feed, feathers, and material used as bedding in poultry operations which contains phosphorus and urea which is a NPN (non protein nitrogen). This can be used to substitute groundnut cake (GNC)

MATERIALS AND METHODS

The experiment was carried out at the Teaching and Research Farm of Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria. Lapai lies between latitude 9°31 and 9°45, east of equator (Usman, 2013). maize, bone meal, lime stone, salt, wheat offal, premix, groundnut cake were purchased from Animal Care retailer shop GidanMatasa, Okada road, Minna, Niger State. Poultry droppings was obtained from animal section of Ibrahim Badamasi Babangida university teaching and research farm Lapai, Niger state, Nigeria and oven dried at 20°C, 40°C, 60°C, 80°C and incorporated into the diets of the rabbits,

excluding treatment one . The hutches were washed and disinfected one week to the arrival of rabbits . on arrival feed and water served were immediately for 7 days for the animals to be acclimatized. The rabbits were randomly assigned into four dietary treatments in a completely randomized design (CRD). Each treatment was replicated thrice with three (3) rabbits per replicate. Anti-stress (Vitalyte) was given to the rabbits on arrival in oral form (via drinking water).Experimental diets were compounded at 0, 20, 40, and 60% inclusion levels of poultry dropping. Four diets were compounded and designated as :Diet or treatment 1 (control) contained no poultry dropping. T2 contained 20% PD meal T3 contained 40% PD meal and T 4 contained 60% PD meal. Weight of the individual rabbits were taken on weekly basis, feed intake was recorded daily and using the current price as at the time of experiment to determine cost of feeding rabbits..Data collected were subjected to analysis of variance (ANOVA), using SAS (2000). Means were separated using Duncan Multiple Range Test (1955)

RESULTS AND DISCUSSION

Results obtained for growth performance parameters (final body weight gain, initial weight, average feed intake, feed conversion ratio) in Table 2 revealed that there were no significant ($P>0.05$) difference. However, there were slight differences in the numerical values of most of the parameters. T4 (60 %) recorded highest final body weight (1054.00 g), Total body weight gain and weekly body weight were observed to be higher in T3(40 %) levels of inclusion 313.00 and 39.10 g . T2 (20 %) recorded a higher weekly feed intake and feed conversion ratio of 473.60 and of 14.33 and lower and better at T3 (30 %) with 11.98 g in this trial and is similar to the result of Adegbola and Osuji (1985) with a value of 466.55g when rabbits were fed diet containing 60 % maize and varying levels of cassava leaves and higher than range of 5,7 – 9,44 obtained by Abu and Ekpenyong when rabbits were fed palm oil seed meal. This may be attributed to the fact that rabbits were not able to enhanced feed intake for better utilization of the diets.

The highest cost of feeding rabbit per kilogram was obtained in control diet (T1) ₦ 152.428

while the lowest cost of feed per rabbit per kilogram was in diet 5 (T5) ₦ 138.73 of oven dried poultry diets. This shows an indication of favourable cost analysis which could be translated to mean a positive response of rabbits to the diet and agreed with several reports of Ayoade *et al.* (2000), Adeniji and Ehinmidu (2007) Adama *et al.* (2007), Amaefule *et al.*(2008) and Igwebuikwe *et al.* (2013), who recorded highest feed cost on the control diet when rabbits were fed graded levels of dried bovine rumen ingesta (DBRI) and Adekojo (2015) when rabbits were fed *Leucaena leucocephala* leaf meal processed different with methods. The cost f feed intake per weight gain was highest on the same control diet and lowest in diet 5 (₦ 2.02 and ₦ 1.84).

CONCLUSION

The result obtained from this study indicated that oven dried poultry dropping meal could serve as a source of plant protein in rabbit diets. It also showed that oven dried poultry dropping meal can be used to replace 40% groundnut cake without any harmful effect moreso, cost efficient and effective in rabbit diets.

REFERENCES

- Abu , O. A and Ekpenyong, T. E. (1993). Utilization of dried palm oil effluent by growing rabbits .World rabbit Congress
- Adama, T.Z., Ogunbajo, S.A. and Mambo, M. (2007). Feed Intake, Growth Performance and Nutrient Digestibility of Broiler Chicks Fed Diets Containing Varying Levels of Sorghum Dried Brewers' Grains. *International Journal of Poultry Science*, 6(8): 592-595
- Adegbola, T. A.and Osuji, H. N. (1985).The effect of dietary fibre levels on dry matter intake and nutrient digestibility in the rabbits. *Nigerian Journal of Nutritional Sciences*,6(2): 113-118.
- Adekojo, S. A. (2015). Effects of different methods of processing *Leucaena leucocephala* leaf meal on growth, carcass and reproductive performance of rabbits.(*Oryctolagus cuniculus*). PhD thesis. Department of Animal Production. Federal University of Technology, Minna, Nigeria
- Adeniji, A. A. and Ehinmidu, O. M .(2007). Effect of feeding pullet chicks, cotton seed cake with or without fishmeal

- supplementation. *International Journal of Poultry Science* 6(11);818-827, 2007 ISSN 1682-8356. Asia Network for scientific info, 2007.
- Amaefule, K. U., Okechukwu, S. O., Ukachukwu, S. N., Okoye, F. C. and Onwudi, O. C. (2004). Digestibility and nutrient utilization of pigs fed graded levels of brewers' dried grain based diets. *Livestock Research for Rural Development*. (1) 18 (2) 64-68.
- Ahamefule, F. O., Ibeawuchi, J. A., Ukwani, I. A. and Umunnakwe, D. U. (2008). Performance of weaner rabbits fed diets containing raw and processed pigeon pea (*Cajanus cajan*). *Journal of Animal and Veterinary Advances*, 6 (6): 797-801
- Ayoade, L. A., Obiaka, E. D., Uza, D. V. and Ibeawuchi, J. A. (2000). Performance and carcass characteristics of rabbits fed diets with different levels of dried bovine rumen content. *Journal of Sustainable Agriculture and the Environment*, 2(2):162-167
- Belenguer, A., Fondevila, M., Balcells, J., Abecia, L. M. And Carro, M. D. (2008). In vivo and in vitro study of caecal fermentation pattern and methanogenesis in rabbits. Proceeding 9th World Rabbit Congress, June 10-13, 2008. Verna, Italy. Pp535-540.
- Cheeke, P. R. (1986). *Rabbit feeding and nutrition*. Academic press, Washington D.C., USA.
- Duncan, D. B. (1955). New Duncan Multiple Range and Multiple F- test. *Biometrics* 11:1-4
- Igwebuike, J. U, Medugu, C. I., Kwari, I. D. and Dauda, A. (2013). Growth performance and nutrient digestibility of growing rabbits fed two varieties of sorghum as replacement for maize as energy source in tropical environment. *Global Journal of Bio-science and biotechnology*. 2 (2) pp 167-172.
- Lukefahr S. D. and Cheeke, P. R. (2009). Rabbit project development strategies in subsistence farming systems 2 Research applications. *World Animal Review*. France. 3, 257-261.
- Omole, T. A. (1982). The effect of levels of dietary protein on growing and reproductive performance in rabbits. *Journal of Applied Rabbit Research* 5:83-88.
- Statistical Analysis System (SAS). (2002). Computer Software, Version 9 Statistic SAS institute Inc. Cary, N.C. 27513, U.S.A.
- Usman, B. A. (2013) Vulnerability and adaptation capability of the rural poor to climate change effect in Kwara State, Nigeria. *Lapai Sociological Review*, 4(1): 142-162

Table 1: Composition of the experimental diets containing oven dried poultry dropping (%)

Ingredients (%)	T1	T2	T3	T4
	0	20	40	60
Maize	64.50	64.50	64.50	64.50
Groundnut cake	21.50	17.20	12.90	8.60
Oven D P D	0.00	4.30	8.60	12.90
Wheat offal	10.00	10.00	10.00	10.00
Bone meal	2.00	2.00	2.00	2.00
Limestone	1.50	1.50	1.50	1.50
Salt	0.25	0.25	0.25	0.25
*Premix	0.25	0.25	0.25	0.25
Total	100	100	100	100
Calculated values				
Crude Protein (%)	17.31	17.81	18.74	18.95
Crude Fibre (%)	3.60	6.96	12.30	14.14
ME (Kcal/kg)	2314.30	2453.38	2487.75	2535.18

*Provided per kilogram of diet: vitamin A, 10000IU (retinyl acetate); cholecalciferol, 3000IU; vitamin E, 8.0IU (DL- α -tocopheryl acetate); K, 2.0mg; thiamine, 2.0mg; pyridoxine, 1.2mg; cyanocobalamin, 0.12mg; niacin, 1.0mg; pantothenic acid, 7.0mg; folic acid, 0.6mg; choline chloride, 500mg; Fe, 60mg; Cu, 8.0mg; Zn, 50mg; Co 0.45mg; I, 0.22mg; Se, 0.1mg. 0.00 % = TRT1 (control); 10.00 % = TRT; 20.00 % = TRT; 30.00 % = TRT; 40.00 % = TRT5 BDG. ME= Metabolizable energy

Table 2. Effect of varying dietary inclusion Levels of oven dried poultry droppings on the growth performance (g) of rabbits (*Oryctolagus cuniculus*) 8 weeks .

Parameters	Levels of Industrially Produced Brewers Dried Grains (%)				SEM	LSD	LS
	T1 0	T2 20	T3 40	T4 60			
Initial weight (g)	678.00	683.00	711.00	722.00	44.00	107.80	NS
Final weight (g)	968.00	955.00	1024.00	1054.00	66.71	63.20	NS
Total body weight gain (g)	281.00	272.00	313.00	282.00	48.70	119.20	NS
Weekly body weight gain (g)	35.10	34.00	39.10	35.20	6.09	14.80	NS
Total feed intake (g)	3730.00	3789.00	3670.00	3748.00	96.96	237.10	NS
Weekly feed intake (g)	466.30	437.60	458.80	468.50	12.11	29.64	NS
Feed Conversion Ratio	13.77	14.33	11.98	13.53	2.52	6.17	NS

^{abc}Means with the same superscript (s) in the same row are not significantly ($P>0.05$) different

SEM = Standard Error Mean

CV = Coefficient Of Variation

LS = Level of Significance

NS = Not Significant

Table 3. Effect of different dietary inclusion levels of oven dried poultry droppings meal on cost of feeding rabbits (*Oryctolagus cuniculus*)

Parameters	Levels of oven dried poultry droppings (%)			
	T1 0	T2 20	T3 40	T4 60
Cost of feed/kg /#)	152.28	147.76	143.25	138.73
Total feed intake per rabbit (g)	3730.00	3789.00	3670.00	3748.00
Total cost of feed intake/rabbit (#/g)	568.00	559.86	525.73	519.96
Total weight gain (g)	281.00	272.00	313.00	282.00
Cost of feed intake/(#) weight gain(g)	2.02	2.06	1.68	1.84

Key:

T1 = 0 % Brewers dried grains

T2 = 10 % Brewers dried grains

T3 = 20 % Brewers dried grains

T4 = 30 % Brewers dried grains

T5 = 40 % Brewers dried grains

The study was conducted to determine the effect of varying levels of oven dried poultry droppings meal on the cost of feeding rabbits. The results showed that the cost of feed/kg decreased as the level of oven dried poultry droppings meal increased. The lowest cost of feed/kg was recorded for rabbits fed with 60% oven dried poultry droppings meal (138.73). This was significantly lower ($P<0.05$) than the other treatments. The total feed intake per rabbit was not significantly different ($P>0.05$) among the treatments. The total cost of feed intake/rabbit was significantly lower ($P<0.05$) for rabbits fed with 60% oven dried poultry droppings meal (519.96) compared to the other treatments. The total weight gain was not significantly different ($P>0.05$) among the treatments. The cost of feed intake/(#) weight gain(g) was significantly lower ($P<0.05$) for rabbits fed with 60% oven dried poultry droppings meal (1.84) compared to the other treatments. These results suggest that the inclusion of oven dried poultry droppings meal in the diet of rabbits can reduce the cost of feed/kg and the total cost of feed intake/rabbit, which may be beneficial for rabbit producers.