



## EFFECTS OF FEEDING BANANA PEELS MEAL ON THE PERFORMANCE OF WEANED RABBITS

Adamu B<sup>1&5</sup>, Abdullahi, S<sup>2</sup>, Usman, K<sup>3</sup>, Saidu, S. G<sup>4</sup>, Surayya A.<sup>5</sup>

<sup>1and 5</sup>Adamawa State Polytechnic, Yola Adamawa State Nigeria

<sup>2</sup>Post Primary School Management Board, Yola Adamawa State, Nigeria

<sup>3</sup>Adamawa State University Mubi, Adamawa State, Nigeria.

<sup>4</sup>Federal College of Education Yola Adamawa State, Nigeria

Corresponding author: email address:adamububajimeta@gmail.com

### ABSTRACT

The study was carried out at the Teaching and Research Farms Federal College of Education, Yola Adamawa State Nigeria to determine the performance of weaned rabbits fed graded inclusion levels of banana peels meal (BPM) diets. Thirty-six (36) weaned rabbits aged between 5-7 weeks, with an initial weight of 624.24 to 682.54g were used, daily feed intake ranged from 48.66 to 52.53g, daily weight gains 6.33 to 7.95g final weight gain was 1156.12 to 1299.57g, and feed conversion ratio 6.36 to 7.97. Four treatments feeding trial (T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>) was subjected to a completely randomized design (CRD) with different inclusion levels of banana peels at 0, 10, 20 and 30%, respectively. The highest weight gain was recorded in diet T<sub>4</sub>. This implied that the inclusion levels of banana peels in the diets have no allergic effect on the Rabbits. The study concluded that 30% of banana peels can be incorporated by farmers as one of the alternatives feeds substitute for maize in the diet of rabbit so as to reduce the total costs of feeds.

**Keywords:** Banana peels meal, weaned rabbits

### INTRODUCTION

Agricultural wastes from crops and crops residues in the rural, sub-urban and industrial settlements have often constituted health hazards due to inadequate means of disposal (Akaeze *et al*, 2014, Tell, 2005). Banana peels are obtained by peeling the banana fruits for consumption or production of other industrial foods, the peels constitute a nuisance in the study area, that lead the commencement of this study as it became paramount in order to relief in tumbling the waste and change it to useful materials (meat). The peels are light and fairly tough when properly dried. These by-products are relished by sheep and goats that scavenged in the localities; the waste appears fibrous in nature but could be suitable for non-ruminants if the intake and utilization are improved (Ayoola, 2014).

To satiate the food demand particularly protein from animal origin for growing populace, different techniques of animal protein production and consumption need to be discovered and explored, Rabbits are an abundant sources of protein production, consumption, source of income and employment for commercial production. Rabbits need trivial place for living and a smaller amount of food for survival compared to other livestock, they can consume low quality foods and convert these foods to high quality meat, skin or fibre, they are prolific, fast in growth and the doe kindled 2 to 8 kittens per litter, their meat contains high ratio of protein, energy, calcium and vitamins, with less cholesterol, fat and sodium than other

meat(Nathaniel, 2004). Their meats are tasty, nutritious, and easily digestible, with no religious taboos attached to their meat consumption (Onakpa and Owoleke2010), with recent and growing market for rabbit meat in Nigeria especially as an alternative livestock species (Barua, 2014).

## METHODOLOGY

### Sources of banana peels

The banana peels were sourced from banana sellers in the local markets within Yola metropolis and sun dried, where samples were grind to reduce the particles size, analyzed, stored in bags and incorporated into the test diets.

### Source of Experimental Animals, Housing and Management

Thirty-six (36) New Zealand white rabbits breed aged 5-7 weeks were purchased around Yola metropolis, with initial weight ranged from 624.24 to 682.54g were used for the experiment, kept in an improvised cage of wood and wire mesh, one-week adaptation period or acclimatization was used before data collection to enable the animals adapt to the new environment and diets. Feeds were offered twice a day, morning at 7:30am and evening at 3:30pm daily. Initial weight was recorded before the commencement of the experiments, daily records of feed intake were taken while weight gains were also recorded weekly and the experiment lasted for 84 days.

### Data Collection

The rabbits were reared for 12 weeks (84 days), feed intake, live weight gain and feed conversion ratio were recorded.

### Statistical Design and Analysis

Thirty-six (36) growing rabbits were randomly allocated to four dietary treatments, three replicates with three rabbits per replicate in a completely randomized design, the data collected was subjected to Minitab computer software for analysis and the means were subjected to analysis of variance as described by (Steel and Torrie (1980), while the treatment means were compared using least significance differences (LSD).

## RESULTS

**Table1: Proximate composition of nutritional content in banana peels-Agro waste**

Nutrients	Wet sample
Moisture (MO)	50.50
Dry matter (DM)	49.50
Crude protein (CP)	5.30
Ether extract (EE)	1.60
Crude fibre (CF)	19.20
Ash (Ash)	8.80
Nitrogen free extract (NFE)	14.60
Gross energy (Kcal/kg)	844.16

ME= Metabolizable energy, CP=crude protein, CF=crude fiber

**Table 2: Effects of feeding banana peels meals on the performance of weaned rabbit**

Parameter	T1	T2	T3	T4	SEM
Initial weight (g)	624.24	637.81	682.54	632.12	18.24 <sup>NS</sup>
ADFI (g)	48.66	52.53	52.42	50.54	1.97 <sup>NS</sup>
ADWG (g)	6.33	7.19	6.58	7.95	0.76 <sup>NS</sup>
Weight gain (g)	531.87	604.22	552.91	667.45	1.97 <sup>NS</sup>
Final weight (g)	1156.12	1242.03	1235.45	1299.57	43.54 <sup>NS</sup>
FCR	7.68	7.31	7.97	6.36	1.98 <sup>NS</sup>

IW= Initial Weight, DFI= Daily Feed Intake. FWG= Final Weight gain. DWG= Daily Weight Gain. FCR=Feed Conversion Ratio. SEM=Standard Error Mean. NS=Not significant ( $P>0.05$ ) = Significant ( $P<0.05$ ). Mean in the same row bearing different subscript differ significantly ( $P<0.05$ ).

## DISCUSSION

Proximate composition gives important information on the nutritional composition and help to access the quality of the sample. It provides information on moisture (MO), crude protein (CP), ether extracts (EE), crude fibre (CF) and Ash. Studies revealed that fruits waste among other vital nutrients had an appreciable quantity of carbohydrate, protein, fat, fibre and phytochemicals.

The moisture content recorded (50.50%) of water content which play an important role in determining the shelf-life of the products. Products with lower water content generally are less subjected to degradation by microorganisms and chemical changes.

Ash (8.80%) is the inorganic residue remaining after water and organic matter has been removed through heating process. Ash compositions are the number of minerals elements in food.

Crude protein (5.30%) provides amino acids which are the substrate required for the support of the body protein synthesize and maintenance of cells and organs protein contents.

The finding of this research was in lined with the values reported by Romelle *et al* (2016) who revealed that these peels are sources of nutrients such as lipids, protein and minerals etc. The recorded values 1.6 % of lipids content were similar to the values of 1.5 % as reported by Moraise *et al* (2018), but lower than the figure recorded by Mungut *et al* (2006). The lower values 1.6 % could be attributed to the differences in varieties or geographical factors.

The ash content of banana peels were 8.80 % similar to the values recorded by Emega *et al* (2007). 6.4 to 12.8 %. The value calculated in the study revealed that banana peels had energy values in the ranged of other fruits by-products such as citrus peels, orange peel and cassava peels.

The growth performance indices of the rabbits includes average daily feed intake (ADFI). Average daily weight gain (ADWG). Feed conversion ratio (FCR) and final weight gain (FWG) were not significantly ( $P>0.05$ ) influence by feeding banana peels meals. The average daily feed intake values ranged from 48.66 to 52.53g obtained in this study however were

lower than the figure 56.19 to 66.28g as reported by Agunbiade *et al* (2003) and Ademola (2003).

The Average daily weight gain (ADWG) values 6.33 to 7.95g were lower than the figures 9.35 to 10.29g as reported by Yakubu and Wafar (2014) and also conversion ratio ranged from 6.36 to 7.97 are higher than the values 4.87 to 5.44 as reported by Yakubu and Wafar (2014). However the results revealed that livestock consumed rations with the aims of meeting their energy needs and that the excess energy consumed will bestorein form of fats.

Thus, the use of banana peels showed no significant difference ( $P>0.05$ ), this was because the meat and bones produced also showed no significant difference, the results revealed that the average rabbit meat protein was 20.23%.

## REFERENCE

- Ademola, A.A., Amaefule, K.U., and Iyank, N. E. (2003). Performance and nutrients utilization, in testinal environment of weaned rabbit and diets supplemented with organic acid in the humid tropic. Nigeria Journal of Animal Science, 13: 69-79.
- Agunbiade, A. B., Taiwo, A. A, and Adeola, J. S. (2003). Performance and nutrients digestibility of weaned rabbit fed forages, supplemented with concentrates. Nigeria Journal of Animal Production, 32 (1): 74-78.
- Akaeze N, Nwokoro S, Imasuen J (2014). Performance of growing rabbit offered rubber leaf protein Journal of livestock science 5: 83-85.
- Ayoola, G.R (2014). Effects of replacing maize with sun-dried rice straw meal on growth performance, carcass characteristics and economics of production of meat type rabbit. American Journal of Research Communication2 (1): 185-195.
- Barua I. O (2014) Profitability and constraints to rabbit production under tropical condition in Nigeria. Journal of livestock science 5: 83-85
- Emega, A. M. Idowu, B.B. Ikunor T. A. (2007). Nutrients and anti-nutritional composition of banana peels leaves: Animals in developing countries publication, British society for animal production 69-98
- Onakpa M.M. and Owoleke O.E. (2010). Problems and prospects of rabbit production in Nigeria replacement for soyabean meal. Niger.
- Moraise, B. M. Jenkins, A. V. and Ngoshe, B. A. (2018). Food composition table for West Africa. FAO. Rome. Italy. 20-24.
- Mungut, S. A. Iyayi, E. A., Inudson, B. T. C. (2006). Practical guides to rabbits and Fenets. American animal husbandry association Lake wood, USA.1-42.
- Nathaniel E. U., (2004). A guide to raising rabbits: Care facilities management breed selection. P.1-3 Nigeria, a review Bayero university Journal of pure and applied science Vol. 3 No. 2 (2010).
- Romelle, A. A. Bakrew, B. M. and Ojewole, A. B. (2016). Nutrients composition of banana peels meal leaves. M.Sc. Thesis Department of biochemistry Ahmadu Bello University Zaria 23-50.
- Steel, R.G.D and Torrie, J.H. (1980). Principles and procedures of statistics. A biometrical approach 2<sup>nd</sup> edition. McGraw hill book co. Inc. New York, PP63.
- Tell Communication Ltd. (2005) Seminar on opportunity for Wealth creation in Agribusiness. Porto-Novo. Republic of Benin, July 18-22.2005.
- Yakubu, B. and Wafar R. J. (2014). Effects of processed methods of leptademiahustata on growth performance, nutrients digestibility and carcass characteristics of weaned rabbits. Journal of agriculture and veterinary science 7:53-58