

CONFERENCE PROCEEDINGS



GROWTH PERFORMANCE OF WEARNER RABBITS FED DOUM PALM MEAL (Hyphaene thebaica) BASED DIETS

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ABSTRACT

This study was carried out to investigate the growth performance of rabbits fed diets containing varying levels of doum palm meal. Forty(40) rabbits were randomly allotted to four dietary treatments of five replicates in a completely randomized design with two (2) rabbits per replicate. They were fed four experimental diets containing 0, 5, 10 and 15 % doum palm meal respectively. Data obtained were subjected to analysis. The result showed that there were no significant differences (P>0.05) in the values obtained for average initial body weights. However, there were significant (P<0.05) differences in the values obtained for average final body weight, average body weight gain, average daily weight gain, average daily feed consumed and feed conversion ratio. Rabbits fed diets containing 15 % doum palm meal performed better recording the highest final body weight of (1512. 80 g), this was followed by rabbit groups fed 10 % doum palm meal (1205.50 g). The highest average daily feed consumed (63.15 g) was observed in rabbits fed diet containing 15 % doum palm meal (1205.50 g). The highest average daily feed consumed (61.13 g), 5 % (61.22 g) and 0 % (58.03 g) doum palm meal respectively. In conclusion, doum palm meal could be used up to 15 % substitution for maize in rabbit diets without any adverse effect on growth performance.

Keywords: Growth performance, weaner rabbit, doum palm meal.

INTRODUCTION

Rabbits are herbivores with early maturity, short generation interval, high prolificacy, and ability to utilize forages that abound in rural communities (Ojebiyi et al., 2010; Dalle- Zotte, 2014). Rabbit meat is healthy and has high nutritional value due to its low content of fat, cholesterol, calories and sodium, as opposed to beef, chicken and pork (Dalle-Zotte and Szendro, 2011). Despite all these advantages, the cost of rabbit feed has increased due to shortages and high cost of conventional feed ingredients, particularly the energy supplements (Chand et al., 2014). Conventional energy sources are becoming costly due to high demand from humans and animals. This increases production cost and makes it uneconomical to feed conventional feedstuffs to rabbits in developing countries (Cole, 2014). There is also growing cases of banditry, kidnapping and insurgency across the country and these have further led to an increase in prices of feedstuff for animals. This therefore, according to Amaefule et al (2003), calls for a rethink and expansion of the resource base that can accommodate some unconventional feed ingredients that have comparative nutrient potentials like the conventional ingredients. To ensure unimpeded all-year-round rabbit production at a minimal cost, alternative, cheap and less competitive feed ingredients such as down palm meal (Hyphaene thebaica) (DPM) can be used to formulate balanced rations for rabbits. Doum palm (Hyphaene thebaica) belongs to the Arecaceae family. The available information regarding the effect of dietary DPM on rabbit is very scarce. However, authors have reported doum palm to be nutritionally rich in essential nutrients that can support optimal growth in animals. Doum palm has been reported to contain metabolizable energy of 2254.5 ME (Kcal/kg), protein 2.92 %, fat 0.49 %, calcium 0.15 %, dry matter 89.55 %, ash 7.37 % and crude fibre 15.14 % (Ibrahim et al., 2018). Doum palm meal (DPM) has several applications in the food industry, such as in the manufacture of sweetmeats, cakes, and nutritious drinks. Fatty acids, especially the essential linoleic acid and nutritional trace minerals, such as iron, copper, and cobalt, along with low anti-nutritional factors present in this fruit, are vital for the physiological functions of vertebrate organs (Ibrahim *et al.*, 2018). Therefore, the aim of this study is to evaluate the effect of dietary replacement of maize with doum palm meal on growth performance of weaner rabbits.

MATERIALS AND METHODS



CONFERENCE PROCEEDINGS



Experimental site

The research was conducted at the rabbitry unit of the Department of Animal Production Teaching and Research Farm, Gidan Kwano, Federal University of Technology, Minna, Niger State. Minna is located within latitude 09° 30' and 06° 45' North and longitude 06° 30' and 06° 45' East of the equator. It falls within the Southern Guinea Savanna agro-ecological zone of Nigeria. The mean annual rainfall varies from 1100 to1600 mm and mean annual temperature of between 21 °C and 35 °C (FMSN 2015).

Sources and Processing of Experimental Feed Ingredients.

Methionine, Lysine, Fish meal, Vitamin premix, Salt, Bone meal, Limestone, Groundnut cake, Soya bean meal and Wheat offal were purchased from Animal care retailer shop Gidan Matasa, Okada Road, Minna, Niger State, Maize was purchased from Garatu market, Niger State while Doum palm was purchased from local sellers in Suleja market, Niger State. The fruits were cleaned with water to remove any debris, after which the pulp and seed were separated with a stainless-steel knife. The pulp was dried, crushed and ground into fine powder with a grinding machine and properly stored and incorporated into experimental rabbit diets.

	L	Levels of Doum Palm Meal inclusion (%)							
Ingredients	0 % DPM (T1)	5 %DPM (T2)	10 %DPM (T3)	15 %DPM (T4)					
Maize	45.00	40.00	35.00	30.00					
Maize offal	15.00	15.00	15.00	15.00					
Soya bean meal	12.00	12.00	12.00	12.00					
Groundnut cake	15.00	15.00	15.00	15.00					
Wheat offal	08.00	08.00	08.00	08.00					
Doum palm meal	00.00	05.00	10.00	15.00					
Bone meal	03.00	03.00	03.00	03.00					
Limestone	01.00	01.00	01.00	01.00					
Salt	00.25	00.25	00.25	00.25					
Methionine	00.25	00.25	00.25	00.25					
Lysine	00.25	00.25	00.25	00.25					
V. premix	00.25	00.25	00.25	00.25					
Total	100.00	100.00	100.00	100.00					
Calculated values									
Crude protein	18.49	18.65	18.20	17.98					
Crude fibre	06.83	07.21	07.86	08.31					
Phosphorus	01.35	01.30	01.39	01.42					
Calcium	01.01	01.30	01.04	01.06					
Energy (ME) kcal/kg	2838.50	2824.31	2810.19	2796.12					
Total Calculated values Crude protein Crude fibre Phosphorus Calcium Energy (ME) kcal/kg	100.00 18.49 06.83 01.35 01.01 2838.50	100.00 18.65 07.21 01.30 01.30 2824.31	100.00 18.20 07.86 01.39 01.04 2810.19	100.00 17.98 08.31 01.42 01.06 2796.12					

Table 1: Gross composition of doum palm meal-based diets

DPM = Doum Palm Meal, ME = Metabolizable Energy

Experimental Diets

Four experimental diets were formulated for the experiment. Treatment 1 = diet without doum palm meal, treatment 2= diet containing 5 % doum palm meal, treatment 3= diet containing 10 % doum palm meal and treatment 4= diet containing 15 % doum palm meal (Table 1).

Experimental Animals and Management

Forty (40) cross breed (Chinchilla and Dutch) weaner rabbits of mixed sexes, in a ratio of (1:1) were used for the experiment. Before arrival of the rabbits, the experimental house and rabbit hutches were properly washed and fully disinfected. The rabbits were randomly allotted to four (4) nutritional treatments in a Completely Randomized Design (CRD). Each treatment had five replicates with two (2) rabbits per replicate. Rabbits were reared in hutches measuring $0.6 \text{ m} \times 0.5 \text{ m} \times 0.4 \text{ m}$, for 49 days. Medications were given as and when due.



SECURING ANIMAL AGRICULTURE AMIDST GLOBAL CHALLENGES

Rabbits were fed at 5 % of their body weight experimental diets in the morning and forage in the evening (*Mucuna pruriens*). Water was given *ad-libitum*.

Data Analysis

Differences between parameters were analyzed by one-way ANOVA (analysis of variance) and Statistical assessment of result was carried out using SSPS software 15 version, and means were separated using the Duncan multiple range test, where there were statistically significant differences (P < 0.05).

RESULTS AND DISCUSSIONS

Table 2 shows the growth performance of rabbits fed diets containing doum palm at varying inclusion levels. The result showed that there were no significant differences (P>0.05) in the values obtained for average initial body weight (AIBW). However, there were significant (P<0.05) differences among the treatment groups for average final body weight (AFBW), average body weight gain (ABWG), average daily weight gain (ADWG), average daily feed consumed (ADFC) and feed conversion ratio (FCR).

Rabbits fed diets containing 15 % doum palm meal performed better recording the highest final body weight of 1512. 80 g, this was followed by rabbit groups fed 10 % doum palm meal (1333.70) and the least value was recorded on rabbit groups fed 0 % doum palm meal 1205.50 g. The highest average daily feed consumed (63.15 g) was observed in rabbits fed diet containing 15 % doum palm meal, this was followed by those fed 10 % (61.31 g), 5 % (61.22 g) and 0 % (58.03 g) down palm meal respectively. Rabbits fed with diets containing 15 % down pal meal had the best feed conversion ratio (03.82) this was followed by those fed 10 % down palm meal (05.04)and the poorest feed conversion ratio was recorded on the control group (05.95). The significant (P < 0.05) differences observed in final body weight, average body weight gain, average daily weight gain, average daily feed consumed and feed conversion ratio observed in this study indicated that the use of doum palm meals did not have any adverse effect on these growth performance parameters. The highest final body weight observed in rabbits fed diets containing 15 % doum palm meal may be due to better feed utilization as indicated by the feed conversion ratio. Possible reason for significant (P<0.05) differences observed in the average daily feed consumed of rabbits fed with diets containing doum palm meal may be due to pleasant aroma and palatability of doum palm meal. The result of this findings is in agreement with that of Kawu et al (2021) who noticed a significant (P<0.05) increase in the final body weight, average body weight gain, average daily weight gain and average daily feed consumed when weaner rabbit diets were supplemented with doum palm meal as a replacement for maize.

	Treatments					
PARAMETERS	T1	T2	Т3	T4	SEM	LS
AIBW (g)	719.00	711.90	733.60	694.00	6.20	NS
AFBW (g)	1205.50 ^b	1292.20 ^b	1333.70 ^b	1512.80ª	35.54	*
ABWG (g)	486.50 ^b	580.30 ^b	600.10 ^b	814.80 ^a	35.88	*
ADWG (g)	09.93 ^b	11.84 ^b	12.25 ^b	16.62ª	00.73	*
ADFC (g)	58.03 ^b	61.22 ^a	61.31 ^a	63.15 ^a	00.51	*
FCR	05.95 ^b	05.54 ^b	05.04 ^b	03.82ª	00.26	*

 Table 2: Growth performance of rabbits fed diets containing varying levels of doum palm meal

a,b,c = Means in the same row with different superscript are significantly different (p<0.05), AIBW = Average Initial Body Weight, ABWG = Average Body Weight Gain, AFBW = Average Final Body Weight, ADWG = Average Daily Weight Gain, ADFC = Average Daily Feed Consumed, FCR = Feed Conversion Ratio, SEM = Standard Error of Mean.

CONCLUSION AND APPLICATION

From the results obtained, it can be concluded that the inclusion of doum palm meal in the diet of rabbits up to the level of 15 % performed significantly better in all growth parameters observed and does not pose any negative effect on rabbits. This was established from the results obtained in the final body weight, body weight gain and feed conversion ratio. Thus, doum palm meal up to 15 % inclusion levels substitution can be incorporated into the diet of rabbits as a good and rich alternative maize in rabbit diet.



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