

Effects Of Replacing Maize With Sun-Dried Yam Peel Meal On Growth Performance, Carcass Characteristics And Economics Of Production Of Meat Type Rabbit

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Abstract: Twenty rabbits of mixed sexes with an average initial weight of 0.39kg were used to determine the effects of replacing maize with sun-dried yam peel meal on growth performance, carcass characteristics and economics of production of meat type rabbits. The rabbits were randomly allotted to five diets formulated with sun-dried yam peel replacing maize at 0%, 25%, 50%, 75% and 100% level. The results shows that rabbits fed with 100% maize replaced with yam peel had significantly higher ($P < 0.05$) feed intake. Weight gain was observed to increase with increased yam peel inclusion. Growth rate was significantly higher ($P < 0.05$) in rabbits fed as much as 50% percent replacement levels compared with the control. Replacing maize with yam peel showed no significant difference ($P > 0.05$) in the weight of rabbit's primal parts except the shoulder weight, which was significantly higher in 100% maize replacement diet. The cost of producing a unit weight of rabbits was greatly reduced by replacing maize with yam peel meal. Yam peel may therefore be used instead of maize in rabbit's diets to reduce cost of feeding and the heavy dependence on maize in animal feeding.

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Introduction

The rabbits industry is growing in many countries today, hence feeding problems associated with poultry and pig farming are now being encountered by rabbits breeders who depend solely on pellets and concentrates for their animals. The escalating prices of pellets and concentrates for feeding rabbits in Nigeria constitute considerable constraints on the expansion of commercial rabbit production. Thus, there has been increasing research effort focused on the utilization of alternative cheap feed sources (Omole 1992, Esonu et al 1993, Awosanya et al 1999).

Tewe (1998) observed that under the prevailing circumstances, it is unlikely that there will be surplus from conventional cereals and pulses upon which livestock production can develop, he therefore suggested the waste-to-wealth' approach of directing efforts towards harnessing and utilizing by-products and wastes which are not directly being utilized by man as the most logical step. This will reduce competition with man and ensure an efficient disposal of the waste. While a lot of materials have already been investigated for example cocoa husk (Oyelaja *et al*; 1970); Rice bran (Tegbe *et al* 1984); mango seed kernel (Fayeye 1994) and cassava peel (Olagunju 2001), there is no information on utilization of yam

peel in rabbit diet. This research work therefore investigated the effects of replacing maize with sun-dried yam peel meal in the diet of rabbit on growth performance and carcass characteristics. It also aimed at assessing the cost-benefit of replacing maize with yam peel in the diet of rabbit.

Materials and Methods

Yam peels of mixed varieties were collected and sun dried 24 hours after peeling on a clean-cemented floor for 7 days. The dried sample were grounded in a hammer mill, packed in a sack and stored at room temperature. Other feed ingredients used were purchased at Adedon Feed Mill along Owo Road, Akure. The rabbits used for this experiment were sourced in Ondo.

A total of twenty weaner rabbits of mixed sexes with an average weight of 0.39kg were used in the experiment. The animals were randomly allotted into 5 dietary treatments and every treatment was replicated once and each replicate consisted of 2 rabbits in a Complete Randomized Design (CRD). Five experimental diets were formulated such that dried yam peel meal was used to replace maize at 0%, 25%, 50%, 75% and 100% (Table 1). All the diets were made Isonitrogenous (18% crude protein).

Table 1. Percentage Composition Of The Diet

Ingredients	0%	25%	50%	75%	100%
	Replacement Diet 1	Replacement Diet 2	Replacement Diet 3	Replacement Diet 4	Replacement Diet 5
Maize	32.00	24.00	16.00	8.00	0.00
Yam waste meal	0.00	8.00	16.00	24.00	32.00
Wheat offal	6.00	6.00	6.00	6.00	6.00
Corn bran	27.50	27.50	27.50	27.50	27.50
Soya bean meal	9.00	9.00	9.00	9.00	9.00
Palm Kernel cake	16.50	16.50	16.50	16.50	16.50
Fish meal	5.00	5.00	5.00	5.00	5.00
Bone meal	3.50	3.50	3.50	3.50	3.50
Vit-min Premix	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25

Rabbits were supplied water and fed *ad libitum* twice daily for a period of 8 weeks. Drugs were administered to prevent coccidiosis. The record of feed offered and left over were kept daily to estimate feed consumption. Animals were weighed weekly throughout the 8 weeks experimental period.

At the end of the feeding trial, 2 rabbits were randomly selected from each treatment making a total of 10 rabbits. These were weighed, fasted overnight and re-weighed prior to slaughtering. The animals were thoroughly bled by hanging them head down through the hind leg on nail. Then the carcass were dissected and eviscerated. The

carcasses were then dissembled into wholesale cuts and each primal part was weighed using triple beam balance.

To calculate the cost per kg feed, the price of each ingredient was taken and this was used to multiply the quantity (kg) of that ingredient for the different experimental diets. For the calculation of feed per kg weight gain, the price for 1kg of each diet was used to multiply feed conversion ratio.

Data collected were subjected to one way analysis of variance (ANOVA) of a complete randomized Design (Steel and Torrie, 1980) using version 11 of the statistical package of IBMPC (SPSS/PC+).

Results and Discussion

Table 2. Effects of replacing maize with yam peel meal on feedlot performance and cost analysis of meat type rabbit.

Parameters	0%	25%	50%	75%	100%	SEM
	Replacement Diet 1	Replacement Diet 2	Replacement Diet 3	Replacement Diet 4	Replacement Diet 5	
Average initial weight (kg)	0.39	0.36	0.39	0.40	0.40	0.19
Total feed intake kg	5.59 ^a	4.26 ^a	4.47 ^a	4.22 ^a	6.30 ^b	0.28
Total weight gain (kg)	0.60 ^a	0.70 ^{ab}	0.83 ^b	0.94 ^b	0.95 ^b	0.52
Growth rate/day (g)	8.34 ^a	13.39 ^{ab}	14.77 ^b	16.74 ^b	18.12 ^b	1.03
Feed conversion ratio	6.03	5.29	5.84	4.02	6.17	0.36
Feed cost/kg weight gain (₦)	279.71 ^b	226.64 ^{ab}	228.75 ^{ab}	167.51 ^a	197.21 ^{ab}	15.71
Cost/kg feed (₦)	46.39	42.79	39.19	35.19	31.99	-

Mean values within row carrying different superscript differ significantly ($P < 0.05$).

The result of growth performance and cost benefit analysis are presented in Table 2. There was no significant difference ($P>0.05$) in the initial average weight of rabbits used for the investigation. Total feed intake was observed to be significantly higher ($P<0.05$) in rabbits fed 100% maize replacement with yam peel meal when compared with other treatment. This could be attributed to high crude fibre content of the sun-dried yam peel meal. This report is in agreement with that of Lebas (1983) who reported that an increase crude fibre would result in increase voluntary feed intake for growing rabbit. Total weight gain was observed to increase with increased yam peel inclusion in the diet. Total weight of rabbit fed diets with 50% or above maize replaced with yam peel meal were significantly higher ($P<0.05$) than the control. This

result confirmed the observation of Agunbiade *et al*; (1999) when they included cassava peel and leaves in the diet for growing rabbits.

Growth rate per day was significantly higher ($P<0.05$) in rabbit fed 50% or above replacement diets when compared with the control. This results shows that feeding rabbit diet with 50 percent maize replacement with yam peel meal increased the growth performance of growing rabbit.

The cost per kilogramme feed was reduced generally with increasing dietary yam peel meal. Diet 4 (75% maize replacement) also showed the best cost (₦ 167.51) per kilogramme weight gain. The diet had no effect ($P<0.05$) on feed conversion ratio. This result was in conformity with that of Olagunju (2001) who replaced maize with sun-dried cassava peel meal in growing rabbit diet.

Table 3. Carcass Primal Cuts of Rabbits as Influenced by the Diets

Parameters	0% Replacement Diet 1	25% Replacement Diet 2	50% Replacement Diet 3	75% Replacement Diet 4	100% Replacement Diet 5	SEM
Loin weight (%)	27.90	29.10	29.95	29.90	37.30	1.48
Shoulder weight (%)	24.03 ^a	25.20 ^a	25.95 ^a	25.95 ^a	37.05 ^b	1.85
Thigh weight (%)	29.32	29.85	30.60	28.20	45.20	2.07
Rib weight (%)	11.03	9.15	11.85	12.85	19.45	1.01
Length of carcass (cm)	28.50	29.50	30.00	31.00	32.00	0.40
Dressed carcass weight (%)	0.42	0.49	0.47	0.48	0.46	0.03

Mean values within row carrying different superscripts differ significantly ($P<0.05$).

The influence of maize replacing with sun dried yam peel meal in rabbit diet on the primal parts of rabbit is presented in Table 3.

The result showed that dietary treatment did not influence the weight of primal parts except the loin weight which was significantly higher ($P<0.05$) in rabbit fed 100% maize replacement diet than other treatments. Carcass length and dressed carcass weight were not significantly influenced by the dietary treatments. This result is similar to the result obtained by Ngodigha and Mepba (1992) for rabbit fed graded levels of cassava peel meal.

Conclusion

The result of the study indicates that yam peel meal which is economically cheaper than maize can be used successfully to replace maize in conventional rabbit feed without any depression or adverse effect on the growth performance and carcass characteristics of growing rabbit.

Recommendation

It is economical to feed rabbits with maize replaced with sun-dried yam peel meal diet.

Supplementation at 75% could be recommended for optimal performance.

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