

## Performance of Weaner Rabbits Fed Dietary Levels of Cassava Root Meal

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**Abstract:** Twenty cross-breed Weaner rabbits were used to assess the performance of growing rabbits fed cassava root meal as replacement for maize. The cassava root meal was included at 0, 25, 50 and 75% to replace maize in the diets designated as diets 1, 2, 3 and 4, respectively. The rabbits were randomly allocated to four diets. Feed and water were provided *ad libitum* throughout the experimental period of 42 days. The results showed a non significant treatment effect on all the performance parameters. The daily feed intake (35.132-47.36 g), daily weight gain (7.84-12.56 g) and feed conversion ratio (3.65-4.48) were not influenced by the dietary levels of cassava root meal. The feed cost per kg and feed cost per kg weight gain showed progressive decrease with increase in the CRM inclusion levels. The carcass analysis also showed a non-significant treatment effect on most of the parameters measured except the weight of the legs that was affected. In conclusion, CRM can be included in Weaner rabbit diet as energy source at 50% level of replacement for maize without compromising performance and carcass yield with concomitant reduction in feed cost.

**Key words:** Cassava root meal, performance, rabbit and weaners, yield, legs

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### INTRODUCTION

Protein deficiency in some parts of the world has reached an alarming rate. It is a fact that there is an inadequate intake of animal protein in Nigeria (Ajayi *et al.*, 2007). To ease this problem of low animal protein intake there should be an expansion in the production of small, highly prolific livestock with rapid turnover rate at a very low cost. Rabbits are small mammals in the family Leporidae of the order Lagomorpha found in many different continents and climatic zones.

Akinmutimi *et al.* (2006) reported that the prolific nature of rabbits coupled with its short gestation period and generation interval, makes it the animal of choice for multiplication and a short way of increasing animal protein intake. Rabbit meat is nutritionally comparable to that of poultry. It is wholesome, low in cholesterol, sodium and fat but high in protein. Rabbits can be grown for home consumption of the meat in most cultures (Biobaku, 1998). Rabbit production in Nigeria is gaining much popularity but it is constrained by the high cost of conventional feedstuffs which producers can not afford. As a result of the scarcity of maize caused by high competition with industries and humans there is need to explore other viable alternative energy sources. One of such alternatives is cassava root meal. It is relatively cheaper than maize and is available all year round. Nigeria was reported to be the world largest producer of cassava with an estimated production of 39 metric tonnes (FAO, 2011), cassava can produce more carbohydrates per hectare

than any other staple food and can be harvested as needed. The agronomic potentials of cassava revealed that the root meal is a suitable substitute for the reduction of maize requirements in livestock feeding. The major constraints to its utilization are the deficiencies in protein and amino acid (Buitrago and Lockett, 1999) and the high content of hydrocyanic acid (HCN). However, the sweet varieties are known to have lower HCN content. A range of 8-60% of cassava root meal has been recommended for inclusion in livestock feed (Agagu and Okeke, 2005). This study is therefore designed to investigate the performance of Weaner rabbits fed different levels of cassava root meal as replacement for maize.

### MATERIALS AND METHODS

The experiment was conducted at the Abubakar Tafawa Balewa University Teaching and Research Farm, Bauchi, Nigeria. The peeled cassava root tubers were chopped into small pieces and sun-dried. The dried cassava chips were then milled into flour to form the cassava root meal. Four experimental diets were formulated with 0, 25, 50 and 75% replacement levels of cassava root meal for maize (Table 1). Twenty cross-bred weaner rabbits were randomly assigned to the experimental diets in a Completely Randomized Design (CRD). The rabbits were weighed at the beginning of the experiment and were supplied feed and water *ad libitum*. Thereafter, daily feed consumption and weekly body

Table 1: Percentage composition of experimental diets

| Ingredients                                   | Diets   |         |         |         |
|---|---------|---------|---------|---------|
|   | 1 (0%)  | 2 (25%) | 3 (50%) | 4 (75%) |
| Maize   | 65.58   | 49.19   | 32.79   | 16.40   |
| Cassava                                       | 0.00    | 16.40   | 32.79   | 49.19   |
| SBM   | 14.72   | 14.72   | 16.72   | 17.72   |
| Groundnut hay                                 | 10.00   | 10.00   | 8.00    | 7.00    |
| Wheat offal                                   | 5.00    | 5.00    | 5.00    | 5.00    |
| Bone meal                                     | 2.00    | 2.00    | 2.00    | 2.00    |
| Fish meal                                     | 2.00    | 2.00    | 2.00    | 2.00    |
| Salt  | 0.25    | 0.25    | 0.25    | 0.25    |
| Vit. Premix                                   | 0.25    | 0.25    | 0.25    | 0.25    |
| Lysine  | 0.10    | 0.10    | 0.10    | 0.10    |
| Methionine                                    | 0.10    | 0.10    | 0.10    | 0.10    |
| Total   | 100.00  | 100.00  | 100.00  | 100.00  |
| <b>Calculated analysis</b>                    |         |         |         |         |
| Crude protein (%)                             | 16.00   | 14.80   | 14.30   | 13.40   |
| Metabolisable energy (kcal kg <sup>-1</sup> ) | 2918.00 | 2836.00 | 2756.00 | 2678.00 |

weight changes were recorded. The experiment was terminated after a feeding period of 6 weeks. At the end of the feeding trial, three rabbits were selected from each treatment and slaughtered for carcass evaluation. The animals were then thoroughly bled and eviscerated. The carcass, organs and guts were measured using electronic digital balance. Data generated were subjected to analysis of variance technique (SPSS, 1995).

## RESULTS AND DISCUSSION

The results of performance of rabbits fed different levels of cassava root meal were as presented in Table 2. There was no significant difference in the daily weight gain, daily feed intake, feed conversion ratio and feed efficiency for rabbits on the four diets. This could be due to the low palatability of the diets and this agrees with report by Muller *et al.* (1974) that cassava root meal is low in palatability and increasing the level in the diets subsequently reduces the palatability of such diet. The daily weight gain which ranged from 7.84-12.56 g on diets 4 and 3 was not significant statistically. The feed conversion ratio also followed similar trend as feed intake and weight gain. The feed cost • per kg and feed cost • per kg weight gain shows progressive decrease with increasing cassava root inclusion levels. This is because cassava is a cheaper energy source than maize. The result of the carcass characteristics of rabbit fed graded levels of cassava root meal is presented in Table 3. Dressing percentage reported in this study is comparable to the observation by Ojebiyi *et al.* (2012) who obtained the range of 42.15-52.02%. There were no significant differences in the live weight and carcass weight for rabbits on the four diets. Ojebiyi *et al.* (2012) also reported a non-significant treatment effect on all carcass parameters for cockerels fed diets containing rumen filtrate fermented cassava peel meal.

Table 2: Performance of rabbits fed different levels of cassava root meal

| Parameters                      | Diets   |          |           |          | SEM  | LOS |
|---------------------------------|---------|----------|-----------|----------|------|-----|
|                                 | I (0%)  | II (25%) | III (50%) | IV (75%) |      |     |
| Initial weight                  | 670.00  | 610.00   | 620.00    | 660.00   | -    | -   |
| Final weight                    | 1118.00 | 1040.00  | 1140.00   | 1100.00  | -    | -   |
| Daily feed intake (g)           | 44.26   | 47.36    | 46.10     | 35.12    | 7.30 | NS  |
| Daily weight gain (g)           | 12.12   | 10.20    | 12.56     | 7.84     | 2.30 | NS  |
| Feed conversion ratio           | 3.65    | 4.46     | 3.67      | 4.48     | 0.93 | NS  |
| Feed cost (• kg <sup>-1</sup> ) | 44.07   | 42.30    | 39.07     | 37.40    | -    | -   |
| Feed cost • /kg weight gain     | 190.00  | 174.33   | 162.75    | 148.33   | -    | -   |

Table 3: Carcass characteristics of rabbits fed the experimental diets

| Ingredients        | Diets             |                   |                   |                   | SEM   | LOS |
|--------------------|-------------------|-------------------|-------------------|-------------------|-------|-----|
|                    | I (0%)            | II (25%)          | III (50%)         | IV (75%)          |       |     |
| Live weight (g)    | 1133.30           | 1050.00           | 1100.00           | 1150.00           | 92.04 | NS  |
| Carcass weight (g) | 495.30            | 461.67            | 526.30            | 527.67            | 39.21 | NS  |
| Dressing (%)       | 43.70             | 43.90             | 47.55             | 45.84             | 2.56  | NS  |
| Head               | 9.58              | 9.96              | 9.74              | 9.65              | 0.47  | NS  |
| Leg                | 2.44 <sup>a</sup> | 2.59 <sup>a</sup> | 2.85 <sup>b</sup> | 2.81 <sup>b</sup> | 0.25  | *   |
| Tail               | 0.36              | 0.37              | 0.32              | 0.37              | 0.10  | NS  |
| Small intestine    | 12.83             | 11.36             | 10.44             | 10.66             | 1.84  | NS  |
| Large intestine    | 6.02              | 6.63              | 5.32              | 6.19              | 0.62  | NS  |
| Heart              | 0.28              | 0.19              | 0.30              | 0.26              | 0.07  | NS  |
| Liver              | 2.73              | 3.36              | 2.90              | 2.88              | 0.30  | NS  |
| Lung               | 0.64              | 0.50              | 0.52              | 0.57              | 0.09  | NS  |
| Kidney             | 0.52              | 0.57              | 0.61              | 0.54              | 0.04  | NS  |
| Caeca              | 0.55              | 0.69              | 0.40              | 0.36              | 0.17  | NS  |
| Stomach            | 5.54              | 6.02              | 6.14              | 5.75              | 1.02  | NS  |
| Pelt               | 7.16              | 8.40              | 6.69              | 7.40              | 0.83  | NS  |

SEM = Standard Error of Mean, LOS = Level of Significant, NS = Not Significant; <sup>a,b</sup>Means in a row with different superscripts differ significantly and \*: p<0.05

## CONCLUSION

The results of this study indicate that cassava root meal showed good prospect as alternative feeding material for rabbit production especially when maize is scarce. Cassava root meal can replace maize at 75% level with no adverse effect on performance and carcass yield. Also, there was reduction in feed cost.

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