

RESPONSE OF WEANER RABBITS TO DIETARY LEVELS OF MAIZE MILLING RESIDUE AND ITS COST BENEFIT ANALYSIS

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ABSTRACT

The study evaluated the growth performance, and cost benefit of feeding maize milling residue to weaner rabbits. Forty (40) mixed breeds of both sexes aged between 8 and 10 weeks with initial weight of 759-771 g were allotted to four experimental diets. Each treatment consists of ten (10) rabbits with one per replicate. In a completely randomize design. Maize milling residue (MMR) was included at 0, 30, 35 and 40% coded as treatment T1, T2, T3 and T4 respectively. The experiment lasted for eight weeks and rabbits were fed diets as well as clean drinking water throughout the period of experiment. Data were collected on growth performance and cost benefit analysis. The result of the performance parameters measured were not significantly affected by the dietary treatments except for feed conversion ratio of $P < 0.05$. Rabbits fed T3 (35% MMR) had the best FCR than those fed other diets. Feed cost/kg reduced linearly as the level of MMR increased in the diet. However, 35 and 40% MMR diets were better economically compared to control diet (0% MMR diet). It was concluded that inclusion level of up to 40% MMR did not compromise growth performance and economic benefit of rabbits. Therefore, further research should be conducted to determine the utilization of maize milling residue by other species of monogastric animals.

Key Word: Rabbit, Performance, Maize Milling Residue, Financial Benefit.

INTRODUCTION

The potential of rabbit meat as a quality or nutritious food stemmed from its higher protein content, lower fat, lower sodium and cholesterol content compared with other meat sources such as beef, pork, mutton, chevon and chicken (Ajayi *et al.*, 2017). The animal protein content of a typical Nigerian diet is about 17% of the total protein requirements which is lower than 60% in the United Kingdom. In Nigeria consumption of animal protein remain low at about 6.0-8.4g/head which is far below the 13.5g per day recommended by World Health Organization (WHO). Predicted a decline in protein intake to 5.3g per head per day by the year 2010 where as the beef, pork and chicken meat consumptions is expected to remain steady in 2023 with an increase in chicken consumptions of 2% according to the US department of Agriculture (USDA). The aimed attempt at solving low protein intake and poverty alleviation by Nigerian government still remains a mirage. Nworgu, (2009) and Olafedehan *et al.* (2010) highlighted the reasons behind this inadequate intake of animal protein includes short supply of animal products due to poverty, general economic recession and low level of production of the indigenous breed of animal. In order to maximize food production and meat protein requirement in Nigeria, viable opinion need to be explored and evacuated. Among such alternative is the use of livestock species such as rabbit that have great potential for the improvement of production (Owen *et al.*, 2008). The study was conceived to evaluate the performance of weaner rabbits and cost benefit analysis fed graded levels of maize milling residue.

MATERIALS AND METHODS

Study Area

The experiment was conducted at the Teaching and Research Farm, Abubakar. Tafawa Balewa University, ATBU, Bauchi. The area is located within the Southern Guinea Savannah on latitude 10° 18'37.2 N and longitude 9° 50'38.0 E, characterized by two well-defined seasons; Rainy season (May - October) and dry season (November - April). The average annual rainfall of Bauchi is about 1009 mm, highest relative humidity 94% (August) and the lowest 35 % (February). Temperatures are between 13 – 17°C (December – February) and 36 – 37° C (March – April) (World Atlas, 2015).

EXPIRENMENTAL DESIGN AND MANAGEMENT OF RABBITS

Fourty (40) weaner rabbits of both sexes were used for the experiment. The rabbits were randomly distributed to four dietary treatment with ten (10) rabbits in each treatment one as a replicate in a complete randomize design. Four diets were compounded to contain 0, 30, 35 and 40% maize milling residue levelled T1, T2, T3 and T4 respectively.

DATA COLLECTION

Data was collected for final weight, daily feed intake (DFI) daily weight gain (DWG), feed conversion ratio (FCR) and motility. The daily feed intake was obtained by difference between quantity of feed offered and the left-over, retrieved the following morning. Weight gain was determined by difference between two consecutive weighing carried out on weekly basis.

DATA ANALYSIS

Data collected were subjected to analysis of variance using SAS software (SAS, 2008) while significant means were separated with Duncan multiple range test at 5% level of significance.

RESULTS AND DISCUSSION

The percentage composition of the formulated diet is shown in Table 1. It meets the requirement of weaner rabbits as recommended by Aduku, (2004). The performance of weaner rabbits fed maize milling residue-based diets is presented in Table 2. most of the parameters which includes final weight (1292.50 – 1430.00 g), daily feed intake (60.68 – 65.00 g), daily weight gain (10.44 – 11.83 g) were not influence by the dietary levels of MMR except feed conversion ratio at $P < 0.05$. the feed conversion ratio was better on T3 with a value of 4.66. these observations were comparable to daily weight gain of 10.00 – 15.42 g reported by Bawa *et al.* (2017) in weaner rabbits fed Mucuna shell meal base diets.

The economic implication of feedings maize milling residue in rabbit production is presented in Table 3. Feed cost/kg decrease with increasing levels of maize milling residue from ₦190.01 to 135.00 for T1 and T4. However, feed cost/kg gain also decrease with increasing level of MMR in the diet ranging from ₦1172.25 – 750.25 for T1 and T4 respectively. This finding agrees with the previous report on the use of sorghum offal by Ajayi *et al.* (2017) in weaner rabbits.

Table 1: Ingredients and Percentage Composition of Experimental Diets

Ingredient	1(0%)	2(30%)	3(35%)	4(40%)
Maize	45.17	42.51	37.84	33.17
Soybean	11.33	13.99	13.66	13.33
Maize milling residue	0	20	25	30
Wheat offal	20	0	0	0
G/nut hay	15	15	15	15
Rice offal	5	5	5	5
Bone meal	2.5	2.5	2.5	2.5
Salt	0.5	0.5	0.5	0.5
Premix	0.5	0.5	0.5	0.5
Total	100	100	100	100
Calculated composition				
CP	15.8	16	16	16.01
ME	2524.06	2630.00	2588.06	2531.00
CF	9.0	9.06	9.08	9.50
EE	3.56	3.43	3.46	3.30

Table 2: Performance of Weaner Rabbits Fed Maize Milling Residue Based Diets

Parameters	T1(0%)	T2(30%)	T3(35%)	T4(40%)	SEM
Initial weight (g)	759.80	761.30	771.80	771.50	5.83 ^{NS}

Final weight (g)	1351.40	1380.40	1430.00	1292.50	6.10 ^{NS}
Daily feed intake (g)	64.07	65.00	62.18	60.68	4.83 ^{NS}
Daily feed gain (g)	10.44	11.09	11.83	10.95	0.90 ^{NS}
Feed conversion	6.03 ^a	5.85 ^b	4.66 ^c	5.15 ^b	0.39*
Mortality (Number)	0	0	1	1	

SEM= Standard error of Mean; NS= not significant; *= significant at P<0.05; ^{abc}Means in the same row with different superscript differs significantly (P<0.05); MMR= Maize Milling Residue.

Table 3: Cost Benefit Analysis of Feeding Varying Levels of Maize Milling Residue to Weaner Rabbits

Parameters	T1(0%)	T2(30%)	T3(35%)	T4(40%)
Total feed intake/ (kg)	3.58	3.64	3.48	3.39
Feed cost/kg (₦)	190.01	170.20	150.00	135.00
Total feed cost(₦)	680.20	618.80	522.22	457.65
Total weight gain (kg)	0.58	0.62	0.66	0.61
Feed cost/kg gain (₦)	1172.75	998.06	790.90	750.25

CONCLUSION AND RECOMMENDATION

Based on the result of this feeding trial it was concluded that rabbits fed 40% maize milling residue based diet gave better performance, and most economical. Hence, diet 4 is recommended for rabbit farmers.

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