

PERFORMANCE AND ECONOMICS BENEFIT OF WEANER RABBITS FED WITH GRADED LEVELS OF SUN-DRIED SHEEP RUMEN CONTENT AS A REPLACEMENT OF MAIZE OFFAL

Saidu, I., *Mbap, S. T., *Abubakar, M. M., *Bello, K. M., Sa'id, M. Yakubu, N.

Bauchi State College of Agriculture, Bauchi, Department of Animal Production

*Abubakar Tafawa Balewa University, Bauchi, Department of Animal Production

idrissaidu1967@gmail.com 08027961671

Abstract

An experiment was carried out to determine the replacement value of sun dried sheep rumen content (SDSRC) for maize offal (MO). Five diets were formulated such that SDSRC replaced MO at 0, 25, 50, 75 and 100% levels. Fifty weaner rabbits were randomly assigned to five dietary treatments replicated five times with two rabbits per replicate in a completely randomised design. Feed and water were given *ad libitum* and the experiment lasted for eight weeks, whereby parameters for performance and economics benefit were measured. The results portray that, the experimental diets had significant ($p < 0.05$) effect on total weight gain (579.50-958.20g), daily feed intake (78.86-86.34g), daily weight gain (10.35-11.43g) and feed conversion ratio (4.71-8.34). The cost of feed shows that as the level of SDSRC increases the price decreases, the cheapest feed (₦/kg) is diet 5(100%SDSRC) and the most expensive is diet 1 (0%SDSRC). It was concluded that, SDSRC could replace maize offal at 100% without affecting performance attributes and economics of production. The use of SDSRC is recommended as source of fibre in rabbit diets to reduce cost of production and environmental pollution in Nigeria.

Key words: Performance, weaner rabbits, economics, rumen contents and maize offal

Description of Problem

The problem of inadequate protein supply in developing countries can be alleviated by increased rabbit production. High demand for animal and scarcity of resources has necessitated more research on livestock with short generation intervals (1). Nutritionally, rabbit meat has a higher protein (20-21%), lower calories (1749kcal/kg) and lower fat content (10-11%) when compared with meat from most livestock species and is recommended for consumption for persons with cardiovascular illness (2). (3) reported that rabbit has the lowest cholesterol value of 169mg/100g (dry matter basis) when compared with beef (200mg), chicken (200mg) and pork (223mg) it also has low in sodium content. Rumen contents are very rich in crude protein (10-25%) and high (25%) in crude fibre, the later limits its use in poultry nutrition. Several relevant trials have been conducted on the suitability of sun-dried rumen contents (SDRC) as feedstuff for

livestock such as rabbits and fish (4). Preliminary studies of (5) indicated that differences exist between the rumen contents of cattle, camel, sheep and goat with respect to nutrient composition, amino acid profile, and microbial assay. Therefore, rumen content which is available in all abattoirs in Nigeria could be good sources of protein as well as fibre in livestock feed if properly processed and harnessed (6).

Materials and Methods

The research was conducted at Bauchi State College of Agriculture, Bauchi rabbitry unit. The rumen content was collected from certified healthy sheep slaughtered at Bauchi main abattoir immediately after the rumen was incised and sundried for seven days. Fifty weaner rabbits of 5-7 weeks of age were purchase and after acclimatisation they were randomly allotted to five dietary treatment's replicated five times with two rabbits per replicate in completely

randomised design. Five diets were formulated in which SDSRC replaced maize offal at 0, 25, 50, 75 and 100% levels coded as diet 1, 2, 3, 4, and 5 respectively (Table 1). After assigning them to experimental diets their initial weight, daily feed offered, left over and weekly weight gain were measured and recorded using SF-400 digital weighing scale. Feed and water were given *ad*

libitum. Cost of feed was calculated using prevailing market prices of ingredients at the time of the experiment. Data collected were subjected to one-way analysis of variance as completely randomised design using Statistical Package for Social Sciences (7), differences between means were separated using Duncan's Multiple Range Test.

Table 1: Composition of Experimental Diets Containing Sun-dried Sheep Rumen Contents (SDSRC) as a Replacement for Maize Offal

Ingredients	Diets				
	1(0%)	2(25%)	3(50%)	4(75%)	5(100%)
Maize	32.0	32.8	33.8	34.6	35.4
Soybean meal	15.3	14.5	13.5	12.7	11.9
Maize offal	30.0	22.5	15.0	7.5	0
SDSRC	0	7.5	15.0	22.5	30.0
Bone meal	2.0	2.0	2.0	2.0	2.0
G/nut haulms	20.0	20.0	20.0	20.0	20.0
Premix	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25
Lysine	0.1	0.1	0.1	0.1	0.1
Methionine	0.1	0.1	0.1	0.1	0.1
TOTAL	100	100	100	100	100
Calculated Analyses (%)					
Crude Protein	16.01	16.03	15.98	16.00	16.03
Crude Fibre	10.21	11.76	11.80	14.86	16.39
Ether Extract	3.30	3.34	3.68	3.28	3.29
Ash	3.08	3.45	3.81	4.18	4.54
ME (Kcal/kg)	2360.7	2348.8	2338.5	2376.6	2313.8

Results and Discussion

Table 2 shows that, the growth performance of weaner rabbits fed varying levels of SDSRC as replacement for maize offal, the initial weight, final weight and total feed intake were not influenced by dietary treatments ($p > 0.05$). The final weight ranged (1315.00-1711.00g) obtained were similar to those observed by (8) and (9), but lower than the values reported by (10) of 1.810-1.910g in an experiment to evaluate response of growing rabbits to different plant source. The total weight gain, daily feed intake, daily weight gains and feed conversion ratio (4.71-8.34) were significantly influenced ($p < 0.05$), values of feed conversion ratio (4.71-8.34) is almost similar to 4.39-6.64 reported by (11) for rabbits fed graded levels of rice milling by-products. The economic

benefit (Table 3) portray that, the highest total feed intake (4855.14g) was observed in diet 5(100%SDSRC). Feed cost (Naira/kg) decreased with an increased in the level of SDSRC. The total weight gain observed shows that the weight gain decrease as the level of SDSRC increases.

Conclusion and Application

1. Sun-dried sheep rumen content can replace 100% of maize offal's resulting into advantage of reduced feed cost and lower feed cost (₦/kg gain).
2. The use of Sun-dried sheep rumen content in rabbit diets can reduce feed cost (₦/kg), thereby increasing the profit margin of the producer.

3. Rumen contents are cheap source of energy, protein and other nutrients farmers are advised to process and include it in rabbit feeds.

5. The use of SDSRC as a fibre source in rabbit diet is recommended to reduce environmental pollution in Nigeria.

4. Sun-dried sheep rumen content at 75% replacement level was most economical for growing rabbit's production.

Table 2: Performance of Weaner Rabbits Fed Graded Levels of SDSRC as Replacement for Maize Offal

Parameters	Diets					SEM
	1(0%)	2(25%)	3(50%)	4(75%)	5(100%)	
Initial weight (g)	726.80	921.10	780.20	779.60	735.50	208.47 ^{NS}
Final weight (g)	1685.00	1711.00	1420.00	1560.00	1315.00	60.01 ^{NS}
Total weight gain (g)	958.20 ^a	789.90 ^{ab}	639.80 ^c	780.40 ^{ab}	579.50 ^c	41.80 [*]
Total feed intake (g)	4519.88	4763.50	4401.77	4740.44	4855.14	61.33 ^{NS}
Daily feed intake (g)	80.71 ^{ab}	85.06 ^{ab}	78.60 ^b	84.65 ^{ab}	86.34 ^a	1.13 [*]
Daily weight gain (g)	17.13 ^a	13.93 ^{ab}	11.43 ^b	13.93 ^{ab}	10.35	0.74 [*]
Feed conversion ratio	4.71 ^a	6.11 ^{ab}	6.88 ^{ab}	6.08 ^{ab}	8.34 ^b	0.44 [*]

^{abc} - Means bearing different superscripts within a row are significantly different (*= $p < 0.05$) SEM - Standard error of means NS - Not significant ($p > 0.05$)

Table 3: Cost Benefit Analysis of Weaner Rabbits Fed Graded Levels of SDSRC as Replacement for Maize Offal

Parameters	Diets				
	1(0%)	2(25%)	3(50%)	4(75%)	5(100%)
Total feed intake (g)	4519.88	4763.50	4401.77	4740.94	4855.14
Feed cost (₦/kg)	88.01	79.01	75.87	72.26	68.80
Total feed cost (₦)	397.63	376.32	333.90	342.51	334.02
Total weight gain (g)	959.20	778.90	639.80	780.40	578.50
Feed cost (₦/kg gain)	414.63	483.14	521.88	439.11	577.39
Cost Saving (₦)	-	-68.51	-107.25	-24.48	-162.70
Percentage cost saving	-	-14.6	-20.55	-5.57	-28.18

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