
PERFORMANCE AND ECONOMICS OF PRODUCTION OF WEANER RABBITS FED WITH SUN-DRIED SHEEP RUMEN CONTENTS AS A REPLACEMENT FOR WHEAT OFFAL

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ABSTRACT

The study was therefore, conducted to evaluate the performance and economics of production of weaner rabbits fed with varying levels of sun-dried sheep rumen contents (SDSRC) as replacement for wheat offal (WO). Fifty mongrel rabbits were allotted to five dietary treatments replicated five times in a completely randomized design with SDSRC replacing WO at 0, 25, 50, 75 and 100% designated as diet 1, 2, 3, 4 and 5, respectively. Growth performance, weight gain, feed intake and feed conversion ratio were not influenced ($P>0.05$) by treatment. Feed cost (N/kg) and total feed cost (N) reduced as the percentage SDSRC increased. Lower values were recorded for diet 5 (100% SDSRC) of N68.80 and N300.90 respectively. It is therefore, concluded that inclusion of SDSRC in the diet of weaner rabbits reduce cost of production without compromising their production attributes, it is therefore recommended for farmers to incorporate it, to reduce cost of production and environmental pollution in Nigeria.

Keywords: Weaner rabbits, wheat offal, rumen content, performance and economics,

INTRODUCTION

Increase in world population of 7.8 billion in 2020 (PRB, 2020) and high economic activities around the world contributes to increase in demand for meat and meat products especially in developing countries like Nigeria. These have resulted in the inadequate intake of 10.2g, both in quality and quantity, of protein-based diets by an average Nigerian. Out of the 65-72g of reference protein in the diets of the average Nigerian, 35g is expected to come from animal products (Bello *et al.*, 2016). In view of this, there is the need to fill in the gap and one of the means of achieving this is by raising rabbits at affordable cost. The prolific nature of rabbits, coupled with their short gestation period and generation interval, makes them the animals of choice for multiplication and short way of increasing animal protein intake (Uchewa *et al.*, 2014). 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 (AbdulRashid and Juniper, 2016). 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 (Monica *et al.*, 2010). Janieri (1987) 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.

MATERIALS AND METHODS

The experiment was conducted at Bauchi State College of Agriculture, Bauchi Rabbitry Unit, located at Yelwan Makaranta along Bauchi – Dass Road. The rumen contents were collected from certified healthy sheep slaughtered at Bauchi main abattoir immediately after the rumen was incised, the collection of the rumen contents was done in the early hours of morning while slaughter is going on to avoid mixing the rumen contents with that of other species of animals as while as their faeces and blood. The rumen contents were spread on concrete floor and sun dried for seven days by constant raking to ensure complete drying. Fifty mongrel weaner rabbits of mixed sexes between 5 and 7 weeks of age were purchased from rabbit keepers within Bauchi town and its environs for the study. The weaner rabbits were allowed one-week acclimatization period, during which commercial growers mash (vital feed), groundnut haulms and water were supplied *ad libitum*. After the first week of

acclimatization the rabbits were randomly allotted to five dietary treatments replicated five times with two rabbits per replicate in a completely randomized design. Five diets were formulated in which sun-dried sheep rumen contents replaced wheat offal at 0, 25, 50, 75 and 100% levels coded as diet 1, 2, 3, 4 and 5 respectively (Table 1). At the commencement of the experiment each rabbit was weighed to determine its initial weight using SF-400 digital weighing scale. The initial weight was balanced for treatments. Feed was offered *ad libitum*. Daily feed intake was calculated by subtracting the left over from the feed given to each rabbit on daily basis. Each rabbit was weighed on weekly basis to obtain the weekly and daily body weight gain throughout the experiment. Costs of feed were calculated using the prevailing market prices of ingredients at the time of the experiment for the economic appraisal of the feeds. Data collected were subjected to one-way analysis of variance (ANOVAR) as completely randomized design using Statistical Package for Social Sciences (IBM^R SPSS version 21 (2011).

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

Ingredients	TREATMENTS (%)				
	1(0)	2(25)	3(50)	4(75)	5(100)
Maize	36.5	36.5	36.1	35.8	35.4
Soybean meal	10.8	10.8	11.2	11.5	11.9
Wheat 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 Composition (%)					
Crude Protein (%)	16.00	15.90	15.55	15.98	15.81
Crude Fibre (%)	11.10	11.17	14.64	14.66	16.43
Ether Extract (%)	3.49	3.47	3.47	3.46	3.46
Ash (%)	4.39	4.42	4.46	4.49	4.54
ME (Kcal/kg)	2209.95	2238.85	2261.55	2233.40	2314.60

RESULTS AND DISCUSSION

The productive performance of the weaner rabbits fed the various diets is indicated in Table 2. The productive performance of weaner rabbits fed varying levels of SDSRC based diets were not influenced by dietary treatments. The values obtained of initial weight are in conformity with Ogunsiye *et al.* (2014), but not in consonance with Mohammed *et al.* (2005). There is progressive decreased in final weight as the level of SDSRC is increased.

Table 2: Performance of Weaner Rabbits Fed Graded Levels of SDSRC as Replacement for Wheat offal

Parameters	Diets (%)					SEM
	1(0)	2(25)	3(50%)	4(75)	5(100)	
Initial weight (g)	796.90	864.60	882.50	659.00	780.50	27.06 ^{NS}
Final weight (g)	1371.20	1343.20	1300.25	1226.70	1233.70	38.07 ^{NS}
Total weight gain (g)	574.30	478.60	417.75	568.70	453.30	28.37 ^{NS}
Total feed intake (g)	4146.80	4141.70	3970.40	4276.00	4373.60	56.15 ^{NS}
Daily feed intake (g)	74.05	73.95	70.90	76.36	78.10	0.99 ^{NS}
Daily weight gain (g)	10.26	8.54	7.47	10.16	8.09	0.51 ^{NS}
Feed conversion ratio	7.49	9.39	9.49	8.77	9.65	0.62 ^{NS}

SEM - Standard error of means

The results of the economic analysis presented in Table 3, showed that total feed intake increased with increase in the inclusion level of SDSRC with diet 5(4373.60g) having the higher value and diet 3(3970.70g) had the least. Feed cost (₦/kg) decreased progressively as the levels of SDSRC increased in the diet, with the reference diet 1 (90.01) with highest and diet 5(68.80) with the least. Total feed cost (₦) also decreased with an increase level of SDSRC, diet 5(300.90) with 100% SDSRC recorded the lowest total feed cost, while the reference diet 1(373.45) with the highest. In total weight gain(g), all the value observed on the test treatments were lower than the value of the control diet. The values decreased almost with increasing level of SDSRC. Feed cost (₦/kg gain) ranged from 565.96 on diet 4 to 797.77 on diet 3. The value of the control diet 1(650.66) is almost the cheapest except for diet 4(565.96). In terms of cost saving (₦) diet 4 containing 75% SDSRC had the highest (84.70), with a percentage cost saving of 13.02%.

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

Parameters	Diets (%)				
	1(0)	2(25)	3(50)	4(75)	5(100)
Total feed intake (g)	4146.80	4141.70	3970.70	4276.00	4373.60
Feed cost (₦/kg)	90.01	84.83	80.50	75.20	68.80
Total feed cost (₦)	373.45	351.20	319.62	321.86	300.90
Total weight gain (g)	574.30	478.60	417.75	568.70	453.30
Feed cost (₦/kg gain)	650.66	733.81	797.77	565.96	698.17
Cost Saving (₦)	-	-83.15	-147.11	84.70	-47.51
Percentage cost saving	-	-12.78	-22.61	13.02	-7.30

CONCLUSION

Based on the study, the SDSRC had beneficial effects on the performance and economics of rabbit production. It is therefore recommended that rabbit keepers should include it when formulating diet for their rabbits to reduce cost of production and environmental pollutants and to subjugate the competition between rabbits and other livestock on the demand of wheat offal in Nigeria.

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