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Effect of Coffee Senna (*Senna occidentalis*) Leaf Meal on the Growth Performance of Weaner Rabbits

B.M. Muhammad, B.A. Ayanwale and Y.S. Kudu
Federal University of Technology Minna, Niger State

Corresponding author: B.M. Muhammad; E-mail: balamusamhammad@gmail.com Tel: 08069460100

Abstract

The study investigated the effect of coffee senna (*senna occidentalis*) leaf meal (SOLM) on the performance of weaner rabbits. Three diets containing 0 %, 50 % and 100% (SOLM) with concentrate. The experimental forage was air dried and fed to the rabbits between 8.00 am to 6.00 pm while prepared experimental concentrate diet was fed between 6.00 pm to 8.00 am on a daily basis and was fed to a total of 36 mixed sex weaned rabbits, randomly grouped into three treatments in a Completely Randomized Design (CRD). Parameters measured include feed intake, body weight and bodyweight gain. Significant differences ($p < 0.05$) were observed on the average and total SOLM intake but no significant difference ($p > 0.05$) in the final weight, average weight gain, average daily weight gain and feed conversion ratio of the rabbits. Cost analysis confirmed that the best feed cost per kg gain (N512.14) and best Feed Conversion Ratio of 4.63 in diet T3 (100% SOLM) indicated that it was more economical and ideal using T3 diet in terms of weight gain.

Keywords: Rabbits, *Senna occidentalis* Leaf Meal, performance, feed cost.

Introduction

Food and Agricultural Organization (2004) reported low per capita animal protein consumption in developing countries particularly in humid tropics which calls for improvement in the production of short-cycle animals like rabbit. If rabbits are judiciously managed, they can kindle about six times in a year with the average of 6-7 kittens per kindling (Adeyemo *et al.*, 2013). This improvement is also essential by the rapid population growth with resultant increase in the demand for protein from animals. Rabbits have been identified to play vital role in the supply of quality protein especially in rural and peri-urban areas within the tropics (Egbo *et al.*, 2001) this is because, they mature early and their meat has high protein, low fat, low energy and low cholesterol value (Adeyemo *et al.*, 2013). Rabbits have a short generation interval with high litter size and can be raised at the backyard which is well suited to small holder rabbit producers. It is important to note that, feed supply and quality is the major limiting factor to vibrant rabbit production in Nigeria. To make rabbit rearing more viable as a small-scale business, Makinde *et al.* (2014) had advocated the development of alternative feeding materials that are relatively cheap when compared with commercial feeds or conventional feedstuffs. Rabbits can be raised on high fibre feeds and materials that are not utilized by man and since they do not compete with man for grains, they have the advantage over swine and poultry (Adeyemo *et al.*, 2013). One of the non-conventional feedstuff and under-exploited wild legume as feedstuff for rabbits in Nigeria is *Senna occidentalis* (*Cassia occidentalis*). *Senna occidentalis* plants are known as a high fibrous plant with high crude protein value, thus, the choice of *Senna occidentalis*.

The study investigated the effect of coffee senna (*senna occidentalis*) leaf meal on the performance of weaner rabbits.

Materials and Methods

Experimental rabbits were sourced from the Sultan Veterinary Consult, Samaru Zaria. *Senna occidentalis* leaves were harvested from Fadikpe area opposite Kure ultra-modern market Minna, Niger state. The leaves were spread on cleaned floor to dry under shade for two weeks so as to retain its greenish colouration. The diets containing 0 %, 50 % and 100% SOLM with concentrate. The study lasted for twelve weeks during which the rabbits were served experimental forage in the morning (8.00 – 8.30am) and concentrate diet (6.00 – 6.30pm) of a known weight on a daily basis. Water was also provided *ad libitum*. Left over feed were recorded to determine the daily feed intake. Weekly body weights were calculated using electric precision weighing balance (0 – 3kg) Wensar HPB 3000 model to determine body weight. The average weekly body weight was established by dividing the total weekly body weight by the number of rabbits per replicate. The Body weight gain was achieved by calculating the difference between the initial average body weights and the final average body weights of the rabbits. Feed conversion ratio (FCR) was expressed as feed intake in grams divided by the weight gain as described by (Isikwenue *et al.*, 2010).

$$FCR = \frac{\text{Feed Intake (g)}}{\text{weight gain (g)}}$$

The economics of production was determined using the procedure of Malik *et al.* (2015). Table 1 shows composition and calculated value of the experimental diets.

Table 1 Composition and calculated value of the experimental concentrate

Ingredient	Quantity (%)
Maize	53.37
Soya Bean Meal	7.26
Rice Bran	16.56
Groundnut Cake	17.06
Fish Meal	3.00
Bone Meal	1.00
Limestone	0.25
Methionine	0.25
Lysine	0.25
Premix	0.25
Salt	0.25
Total	100
Calculated Values (%)	
Metabolizable Energy (Kcal/Kg)	2741.53
Crude protein	18.04
Crude fibre	9.66
Phosphorus	0.40
Calcium	0.72
Ether extract	6.46

Premix supplied the following per kg diet: vit. A, 10000 I.U; vit. D, 2000 I.U; vit. E, 25 mg; vit. K, 2 mg; Thiamine B1, 1.8 mg; Riboflavin B2, 5 mg; Pyridoxine B6, 3.5 mg; Niacin, 28 mg; vit. B12 0.015 mg; Pantothenic acid, 7.5 mg; Folic acid, 0.75 mg; Biotin, 0.06 mg; chlorine chloride, 300 mg; Manganese, 40 mg; Zinc, 30 mg; Antioxidant 1.25mg Iron, 20 mg; Copper, 3 mg; Iodine, 1 mg; Selenium, 0.2 mg; Cobalt, 0.2 mg.

Result and Discussion

There were no significant differences among treatments in most of the parameters measured except for the feed intake. The final weight of rabbits tends to increase progressively as the body weight tends to increase, as feed intake correspondingly increases particularly the forage intake, this is in agreement with Maidala (2016) who reported that as feed intake increases in rabbits, they tends to be increase in their body weights.

Table 2: Performance characteristics of Rabbits Fed Different Levels of SOLM

Parameters	T1 100 % <i>Tridax</i>	T2 50 % <i>Tridax</i> 50 % SOLM	T3 100 % SOLM	SEM	LS
Initial weight(g)	571.67	571.67	570.00	0.74	NS
Final weight(g)	1565.26	1480.67	1552.50	22.44	NS
CFI	0.00	0.00	0.00	0.00	NS
CCI (N/kg)	112.75	112.75	112.75	0.00	NS
AWG(g)	993.60	909.00	982.24	22.90	NS
AS intake(g)	NS	76.30 ^b	170.13 ^a	25.01	*
AT intake(g)	592.32 ^a	338.41 ^b	0000 ^c	85.86	*
ASNTI(g)	593.32 ^a	413.65 ^b	170.13 ^c	61.45	*
AC intake(g)	4345.84	4187.33	4372.25	41.04	NS
STNC intake(g)	4944.80 ^a	4601.00 ^b	4542.40 ^b	71.02	*
ADFI	58.17 ^a	54.12 ^b	53.44 ^b	0.84	*
ADWG	11.51	10.79	11.56	0.24	NS
FCR	4.94	5.08	4.63	0.10	NS
CWG (N/kg)	555.62 ^a	518.76 ^b	512.14 ^b	7.70	*

a, b = means on the same row with different superscript differ significantly (P<0.05) CFI = Cost Forage Intake, Cost of Concentrate Intake, AWG = Average Weight Gain, AS = Average Senna, AT = Average *Tridax*, ASNTI = Average Senna and *Tridax* Intake, AC = Average Concentrate, STNC = Senna, *Tridax*, And Concentrate, AD = Average Daily Feed Intake, ADWG

= Average Daily Weight Gain, FCR = Feed Conversion Ratio, Cost of Weight Gain, NS = No Significant Difference, * = Significant Difference, NS= No Senna .

Poor digestion and utilisation of protein were reported to be responsible for the poor growth against the expected growth rate. Reduction in the feed intake with incremental level of SOLM could be linked to the presence of tannin in SOLM which led to reduction in palatability of diet because of its astringent effect on oral cavity. The cost of feed intake was significantly lowest also in T3 (100% SOLM) than that of the control diet T1 (0% SOLM) due to the very cheap source of SOLM.

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