

EFFECT OF SELECTED DRIED FORAGES ON GROWTH PERFORMANCE OF SAVANNAH BROWN BUCKS

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ABSTRACT

Ninety (90) days experiment was carried out to investigate the effect of selected dried forages on the growth performance of Savannah brown bucks. Fifteen (15) bucks aged 5-6 months with the average live weight of 8-10kg were used for the experiment. The experimental animals were allotted into three treatment groups with five replicates having a buck as a replicate. T1 were fed with Groundnut Haulms (GH) and Cowpea Haulms), T2 Cowpea Haulms (CH) while T3 were fed with only Groundnut Haulms. All the animals were served concentrate and fed at 2% and 3% body weight of the concentrate and forages respectively. Sole inclusion of groundnut haulms performs better and revealed significant differences ($P < 0.05$) in the forage intake and total feed intake while the result of other parameters measured were not significantly influenced ($P > 0.05$) by the treatments. It concluded that groundnut haulms with concentrate supported better growth performance of savannah brown bucks

Keywords: Savannah brown bucks, Groundnut haulms and Cowpea haulms

Introduction

Increase rate of world population over the years has led to higher food requirement, especially animal protein. Ruminant animals constitute a very important part of the livestock sub-sector of the Nigerian agricultural economy. The potential of small ruminant production in alleviating the low animal protein intake by man in developing nations such as in Nigeria has been reported (Fajemisin *et al.*, 2010). Recently, more attention has been paid to small ruminant production in the tropics as their advantages are becoming more understood than ever before, particularly for their ability to produce meat, milk and skin, even in hostile environments (Konlan *et al.*, 2012; Makun *et al.*, 2013; Okoruwa *et al.*, 2013).

Generally, goats have contributed positively to the economic livelihood of the rural areas particularly the women. Its fast growth rate, short generation interval compared to other ruminant animals, multiple births, high fecundity and its ability to utilize roughages which are not in competition with human food has made it suitable for profitable production, they possess special qualities that are not common to other ruminants (Silanikove, 2000); they are hardy and can survive under harsh environmental conditions where cattle and sheep cannot (Devendra, 2000; Alaku, 2010).

Crop residues represent a high proportion of total feed for herbivorous animals. They are characterized by high content of fibre usually above 40%, low content of nitrogen (0.3-1.0%) and low content of essential minerals such as sodium, phosphorus and calcium. Okoruwa, *et al.*, (2012) also reported that contemporary ruminant feeding development in Nigeria is now geared towards searching for inexpensive and readily available feed resources which can partially or wholly substitute the scarce expensive feedstuffs and inadequate forages. Effort has been made to reduce the effect of the yearly fluctuation of feed which is particularly pasture through researching into non- conventional feed stuffs and roughages. Oluokun *et al.*, (2005) reported that cowpea (*Vigna unguiculata*) husk is a potential supplementary feed for ruminants in the dry season. The large quantity of crop residues are generated at the end of each harvest season which are of no utilizable or consumable value to man. These crop residues if properly harnessed can meet the nutritional needs of these animals as well as eliminating environmental nuisance associated when left unattended to. (Osuiji *et al.*, 1995).

The aim of this study is to reduce feed cost and search for alternative feed sources that can economically supplement the conventional feed ingredients and also to prevent the environmental nuisance caused by these crop residues.

Materials and methods

Study Site

This study was conducted at the Teaching and Research Farm of the School of Agriculture and Agricultural Technology, Federal University of Technology, Minna, Niger State. Minna is located between latitude 9° 37' North and longitude 6° 33' East of the equator. Minna has a mean annual rainfall of 1,300 mm, with an average highest temperature in the month of March and lowest temperature in the month of August. The mean annual temperature is between 22 to 40° C. Minna is located in the Southern Guinea Savannah vegetation belt of Nigeria and has two distinct seasons; wet from March to October and dry from November to March (F.U.T Minna Student Handbook, 2017).

Experimental Diets and their Sources

The experimental diets consisted of cowpea haulms, groundnut haulms and the concentrate supplement mixture formulated to contain 15% CP. The concentrate mixture composed of maize offal (59.37%), wheat offal (29.69%), groundnut cake (8.94%), bone meal (1.50%) and common salt (0.50%). The maize offal and common salt was obtained at the Minna local Market (Kasuwa Gwari) while wheat offal, groundnut cake, and bone meal was purchased, milled and compounded at the livestock feed store and milling centre behind Gidan Matasa Bosso Minna, Niger State. While the cowpea haulms and groundnut haulms were procured from Minna local Market (Kasuwa Gwari).

Table 1: Ingredient composition of concentrate supplement (%)

Ingredient	Composition (%)
Groundnut cake	8.94
Maize offal	59.37
Wheat offal	29.69
Bone meal	1.50
Common salt	0.50
Total	100
C.P = 15, C.F = 21.91, ME	
Kcal/kg = 2155.8	

CP- crude protein, CF- crude fibre, ME- metabolizable energy Kcal- kilo calories Kg-kilogram

Experimental Treatments and Design:

Savannah brown bucks were selected at random balanced for weight then assigned into three dietary groups using five bucks per treatment group (T). Each buck served as a replicate. T₁ was the control and they were fed with the combination of cowpea haulms and groundnut haulms with concentrate. T₂ was fed with Cowpea haulms with concentrate while T₃ was fed with Groundnut haulms with concentrate. Completely randomized design (C R D) was used for this experiment

Sources and Management of Experimental Animals:

The animals were sourced from within Niger state, specifically from Kuta livestock market in Shiroro local government Area. The purchased goats were acclimatized to the new environment for a period of three (3) days. A total of fifteen (15) Savannah Brown bucks with average live weight of 8-10kg between five to six months old was purchased to ensure effective breeding. Their age were determined by dental examination. They were kept on separate pen under intensive management system. They were served concentrate feed between 7am to 8am and roughages were offered after an hour, both the concentrate and forages were given to the experimental animals at 2% and 3% body weight respectively (Makun *et al.*, 2016) while fresh water was always served at *ad libitum*. This experiment lasted for the period of three months.

Table 2: Chemical composition of experimental diet (%)

	Cowpea haulms	Groundnut haulms
DM	97.85	96.00
CP	7.64	7.10
CF	31.95	29.00
EE	3.10	2.78

ASH	8.20	5.00
NFE	49.11	56.12

DM=Dry matter, CP= Crude protein, CF= Crude fibre, EE=Ether extract, NFE= Nitrogen free extract

Table 3: Result showing the growth performance of savannah brown bucks fed with selected forages

Parameters	Trt 1	Trt 2	Trt 3	SEM
Forage Intake (Kg)	23.03 ^{ab}	21.69 ^b	24.40 ^a	0.42
Concentrate Intake (Kg)	17.67	17.24	18.22	0.21
Total Feed Intake (Kg)	40.70 ^{ab}	38.92 ^b	42.62 ^a	0.60
F C R (Kg)	47.89	23.33	27.02	5.63
Initial weight (Kg)	10.10	9.70	9.70	0.20
Daily weight gain (g)	14.12	10.59	21.18	2.80
Final weight (Kg)	11.30	10.60	11.50	0.21
Weight gain (Kg)	1.20	0.90	1.80	0.24

Treatment (Trt) 1: Groundnut Haulms and Cowpea Haulms

Treatment (Trt) 2: Cowpea Haulms

Treatment (Trt) 3: Groundnut Haulms

SEM : Standard Error of mean

a,b = Means within the same row bearing different superscripts differ significantly (P<0.05)

Results and Discussion

The result revealed significant differences ($P < 0.05$) in the forage intake and total feed intake while the result of other parameters measured were not significantly ($P > 0.05$) influenced by the treatments. Both results followed a similar trend with treatment 3 significantly higher in forage intake (24.40) and Total feed intake (42.62). Though similar to treatment 1 followed by treatment 2 (23.03, 40.70) and (21.69, 38.92) respectively. From the result obtained in this experiment it shows that savannah brown bucks prefer the intake of groundnut haulms to cowpea haulms. This could be as a result of the lower chemical composition of the groundnut haulms compare to cowpea haulms which may also be responsible for the higher forage intake and total feed intake of treatment 3. Similarly, the higher intake of treatment 1 than treatment 2 may be as a result of the mixture of the groundnut haulms with cowpea haulms while the lower performance of the treatment 2 could be as a result of the total removal of groundnut haulms on the diet.

Conclusion

This study confirmed that Savannah brown bucks were able to subsist and make appreciable gain on groundnut haulms with concentrate which implies that groundnut haulms can bridge the gap and improve the growth performance of savannah brown bucks as a nutritious forage which is rich and readily available. It is therefore recommended that farmers should feed their bucks with groundnut haulms to minimize cost of feeding and reduce competition with other feedstuff

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