EFFECT OF SUPPLEMENTING WHEAT OFFAL WITH VARIED GRADED LEVELS OF SUGARCANE SCRAPPING ON UTILISATION OF SORGHUM PANICLE FED RED SOKOTO BUCK

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ABSTRACT

Four Red Sokoto bucks of average weight 17. 40 ± 2kg were fed sugarcane scrapping meal in a complete diet to evaluate the nutrients intake, digestibility and nitrogen balance. Using 4×4 Latin Square Designs involving four dietary treatments containing sugarcane scrapping at 0, 10, 20, and 30% levels of inclusion supplementing wheat offal in a complete diet. . The proximate composition of the sugarcane scrapping showed that the scrapping had, 10.01, 2.98 % and 3114 Kcal/Kg of CF, CP and ME respectively. The results of the trial showed that significant high dry matter intake, nutrient digestibility of some and the nitrogen balance values were recorded in the bucks fed 30%. It was concluded that DM intake, nutrient digestibility and nitrogen utilization of bucks can be enhanced by including 30% of sugar cane scrapping in their diets.

Keywords: sugarcane scrapping, wheat offal, Red Sokoto bucks and sorghum panicles.

INTRODUCTION

Supplementation to provide essential nutrient has been found to be the most feasible economic and preferred method of improving the utilization of poor quality forage materials by ruminant animals in the tropics (Adamu *et. al.*, 2013). Sugarcane wastes such as scrapping from cane sugar is one of such local material with potentials as alternative feed stuff for ruminant such as goat. The scrapping consists of the wax, pigment and fibrous material of the rind, and small quantity of the underline parenchyma cells. After scrapping the material lies waste littering in both urban and rural settlement hereby constituting environmental pollution. Sugarcane scrapping poses some nutrients. The finding of Ayoade *et al.* (2007) indicated that its dry matter is about 87.60% with low crude protein of 3.30%. The crude fibre is about 12.70% while the gross energy is about 2.84Mcal/kg. This suggests that it can be a good source of energy for animals. The objectives of this study were to evaluate the intake, digestibility and nitrogen balance in Red Sokoto bucks fed with the sugarcane scrapping meal in a complete diet.

MATERIALS AND METHODS

The experiment was conducted at the Department of Animal Science Farm, Ahmadu Bello University Zaria. Sugar cane scrapping and Sorghum panicle were sourced from local market within Zaria. They were sun dried, milled and packed in sacks and stored prior to feeding. Other feed ingredients which include cotton seed cake, wheat offal, bone meal and common salt were purchased from Labar Agriculture Enterprise, Zaria.

Four Red Sokoto bucks of average weight 17.40kg ±2 were used to study feed intake, digestibility and N balance and were obtained from the Department of Animal science Farm. The animals were dewormed and dipped in ascaride solution. The diets consisted of sugar cane scrapping, Cotton seed cake, Sorghum panicle, Salt and Bone meal. Sugar cane scrapping was included at the levels of 0, 10, 20 and 30% levels of inclusion.

Digestibility and Nitrogen balance studies were carried out using a 4x4 Latin Square design with 4 periods each of 15 days in which ten days were for adaptation, 5 days for Data collection.

The animals were weighed and housed in metabolism cages with free access to feed and clean water supplied *ad libitum*. The diets were offered to the animals daily at 0800hr. 3% of their body weight. Chemical composition of the dried feed and feace samples were analyzed according to AOAC (2001). Data collected during the digestibility trials were subjected to one-way ANOVA SAS (1998) to evaluate for significant difference among treatment means.

Duncan multiple range tests (DMRT) was used to compare treatment means (Duncan, 1955).

RESULTS AND DISCUSSION

Chemical Composition and Nutrients Intake

Table 1 shows the chemical composition of sugarcane scrapping. The crude protein (2.98%) and crude fibre (10.01%) reported in this study were lower than 3.2% CP and 12.7% CF reported by Ayoade *et.al* (2007). Dry matter (94.59%) recorded from the present study was higher than 90.67% reported by Alu *et.al.* (2012).The calculated ME of 3114 kcal/kg was higher than 2970 kcal/kg reported by Alu *et.al* (2012). The likely differences noticed in the chemical composition in this trial concurred with the assertion that environmental differences and soil influence the chemical composition and digestibility of forages grown in different areas and harvested at the same age of maturity (Teferedegne, 2000).

Table 2 indicates the result of Nutrients intake. The inclusion of sugarcane scrapping had statistical ($P<0.05$) impact in nutrients intake. The significant ($P<0.05$) highest intake of DM, CF and NFEI was obtained in the bucks fed diet with 30% inclusion level. This significant increase in Nutrients intake as a result of the inclusion of sugarcane scrapping may be related to the increase in supply of protein, readily available energy and palatability as well (Adamu *et al.*, 2013).

Digestibility and Nitrogen Balance

Calculated nutrient digestibility coefficient is presented in Table 3. The dry matter digestibility was significantly ($P<0.05$) differed across the dietary treatments, in the digestibility trial, inclusion of sugarcane scrapping meal had significant ($P<0.05$) effect on apparent digestibility of DM and CP. The present study is in agreement with finding of Augustine (2005) who investigated the effect of replacement of maize offal with graded levels of sugarcane scrapping meal on the performance of carcass characteristics of grading rabbit. Observed that the rabbit gained weight and digestibility of various nutrient were high.

The results of Nitrogen balance study are presented in Table 4 .Nitrogen intake increased ($P<0.05$) with increase in the level of sugarcane scrapping in the diet. The highest faecal nitrogen excreted was in 0% (25.284). Urinary nitrogen excrete was significantly ($P<0.05$) different and the bucks in the diet with 30% inclusion level of sugarcane scrapping had the highest. This may be attributed to the increased secretion of endogenous protein. Animal tends to conserve nitrogen by urinary excretion (Adamu *et al.*, 2013).

CONCLUSION

Based on the results of this study, it can be concluded that sugarcane scrapping have feeding value as a fodder for small ruminant and can be included up to 30% in the diets of goat without adverse effect on intake and digestibility of nutrients.

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Table 1 Chemical composition of sugarcane scrapping

Parameters	Percentage
Dry matter	94.59
Crude protein	2.98
Crude fibre	10.01
Ether extract	0.56
Ash	3.09

*Calculated using Pauzenga (1985) method

Table 2.Nutrients intake of Red Sokoto bucks fed different levels of Sugarcane scrapping in a complete diet

	Inclusions levels of Sugarcane Scraping				
Parameters (%)	0%SS	10%SS	20%SS	30%SS	SEM
Dry Matter (g/d)	461.67^{b}	466.214^{ab}	479.87^{ab}	495.50^{a}	0.98
Crude protein (g/d)	70.72	71.05	71.29	73.81	1.19
Crude fibre (g/d)	50.04^{d}	57.50^{c}	67.59^{b}	71.62^{a}	0.93
Ether Extract (g/d	15.21	19.13	19.26	19.13	0.31
Nitrogen Free Extract (g/d)	308.50^{a}	306.77^{ab}	301.90^{ab}	295.06^{b}	1.04

^{a,bc} Mean values with different superscripts within a row differ significantly ($p<0.05$)SEM standard error mean and SS Sugarcane scrapping

Table 3. Nutrient digestibility Coefficient by Red Sokoto bucks fed different levels of *Sugarcane scrapping*

Parameters (%)	Inclusion levels of Sugarcane Scrapping				SEM
	0%SS	10%SS	20%SS	30%SS	
Dry Matter (%)	51.49^{b}	54.59^{b}	62.61^{a}	65.56^{a}	1.48
Crude Protein (%)	63.60^{b}	65.28^{b}	72.05^{a}	72.89^{a}	0.68
Crude Fibre (%)	33.48^{c}	49.96^{b}	56.53^{a}	45.05^{b}	1.84
Ether Extract (%)	52.54^{b}	54.88^{b}	67.42^{a}	67.14^{a}	1.79
Nitrogen Free Extract	51.72^{c}	53.23^{b}	58.57^{a}	42.29^{d}	0.69

^{a,bcd} Mean values with different superscripts within a row differed significantly (P<0.05)SEM standard error of means and SS Sugarcane scrapping

Table 4: Nitrogen retention by Red Sokoto bucks fed different levels of sugarcane scrapping in a complete diet

Parameters (g/d)	Levels of Sugarcane Scrapping Inclusion				
	0%SS	10%SS	20%SS	30%SS	SEM
N intake	70.73	71.05	71.29	73.82	1.19
N losses in faeces	25.28^{b}	23.94^{b}	20.33^{a}	20.09^{a}	0.64
N losses in urine	22.97	26.03	23.36	26.55	1.24
Total N losses	48.25^{b}	49.97^{ab}	43.68^{ab}	46.64^{a}	1.15
N absorbed	45.44^{b}	47.10^{b}	50.96^{ab}	53.73^{a}	1.23
N balance	22.47^{b}	21.07^{b}	27.60^{a}	27.18^{a}	0.60
N R AS % of intake %	64.25^{b}	66.30^{b}	71.48^{ab}	72.78^{a}	1.41

^{ab} Mean values with different superscripts within a row differed significantly (P<0.05)SEM standard error of means and SS Sugarcane scrapping