GROWTH PERFORMANCE OF FATTENING RAMS FED DIETS CONTAINING SUGARCANE PEEL MEAL IN THE SAVANNA ZONES OF NORTHERN NIGERIA

[1]Saleh, G., [2] Mohammed, Y. and [3]*Ghude, M. I.

[1]Department of Agric. Education, Federal College of Education (Technical) Bichi, P.M.B., 3473, Kano State Nigeria
[2]Department of Agricultural Education, Federal College of Education Kano, P.M.B., 3045, Kano State Nigeria
[3]Agric Services Department, Ministry for Local Government and Chieftaincy Affairs, Audu Bako Secretariat, Kano – Kano State
*Corresponding Author: elghudemusa@yahoo.com

ABSTRACT
The study was designed and conducted to evaluate the performance of rams under fattening regime using diets containing sugarcane peels as inclusion. Five different diets containing levels of sugarcane peels were formulated to replace wheat offal at 0, 25, 50, 75 and 100% respectively. The experimental diets were coded as A, B, C, D and E. Fifteen Yankasa rams of between 18 – 24 months were used for the study. The rams were kept in a partitioned pen after properly quarantined. The rams were dewormed and administered with antibiotics against minor ailments. The fattening evaluation lasted for seventy (70) days. Average initial weight of the rams were taken and subsequently, weekly weight gain were recorded using weighing scale. There was an increase in weight gain compared to the initial weight. Diet A significantly recorded 34.67 kg followed by 34.57 kg for diet B with 37.00 kg for diet C while diet D recorded 35.77 kg and 33.67 kg for diet E respectively. With this result, there is need to improve the quality of the compositional ingredients to enrich the feed containing sugarcane peel for more utilization as a replacement.
Keywords: Growth Performance, Fattening, Rams, Sugarcane Peel, Savanna Zone

INTRODUCTION

Sheep rearing is an integral part of many family systems in Sub-Saharan Africa (SSA) Agri Farming (2021). They are important animals managed for multiple end uses, like meat, milk, skin, wool and manure Ayoade *et al.,* (2007). Sheep also provide one of the main sources of income for the farmers and they are considered the poor man's livestock as they provide some milk with very little input Agri Farming (2021). Their rearing is an important occupation for the rural people especially less privileged communities and it is profitable ventures for the resource provided and are able to sustain them to some extent on sparse vegetation unsuitable for feeding to other livestock Saleh, (2010). The discarded sugarcane plant by-product (waste), which often leads to environmental pollution when burned, has been found to hold potential as animal feed (Santos *et al.,* 2020). Sugarcane waste is reported to offer various benefits for ruminant animal feed, particularly as a source of fiber or energy (Endo *et al.,* 2014), enhancing carcass characteristics (Almeida *et al.,* 2016), and improving milk quality (Ferreira *et al.,* 2014). Fattening is an intensive feeding of highly nutritious feed to promote fast growth and fat deposition to attain desired carcass growth and quality. Such systems can be applied to sheep as they can simply adapt to an intensive system of production under feedlots and feed supplementation. The feed can also be compounded using the available crop residues by adding required ingredients to make it more utilizable, Agri Farming (2021). Sheep fattening activity is gaining grounds and is fast becoming one of the moat viable potential sources of employment opportunity. It is also a source of livelihood for many families especially in the rural communities. With intervention of World Bank Assisted Projects like Livestock Productivity and resilience Support Project (L-PRES), farmers are undergoing training on effective crop residue utilization as ruminant feed and fattening of livestock as a source of livelihood sustainability. However, further exploration is needed regarding the utilization of sugarcane and its by-products from sugarcane cultivation, especially its use as feed for sheep and other ruminants for optimum utilization.

MATERIALS AND METHODS

Area of the Study

This study was conducted at the Federal College of Education Kano, Department of Agricultural Education – Livestock Teaching and Research Farm.

On Station Feeding Trial with Fattening Sheep

Experimental Feed Preparation

The principal ingredient for the experimental feed is sugarcane peels which was obtained from the noble cane (*S. officinarum*). Other feed ingredients include the following: wheat offal, rice offal, groundnut haulm, cowpea husk, cotton seed cake, bone meal and salt which were purchased from Kano metropolitan market.

Five different diets containing different levels of sugarcane peels were formulated. The peels were used at 0, 25, 50, 75 and 100% levels to replace wheat offal in the diet of fattening Yankasa sheep. The five feed samples were taken to the National Animal Production Research institute (NAPRI), Ahmadu Bello University, Zaria, laboratory for proximate analysis and were analyzed for dry matter (DM), crude protein (CP), crude fibre (CF), ether extract (EE) and ash according to AOAC (1990) and Neutral detergent lignin (NDL) according to Vansoest and Robertson (1900).

Feeding Trial

Experimental procedure, Management and Duration of Study

The project On-station feeding trial was conducted within a period of seventy days. Fifteen (15) Yankasa sheep of about 18 – 24 months, with initial weight of 31 – 31.33 kg were used in this experiment and were purchased from Badume market, Dawakin Tofa Local Government Area of Kano State.

The pens

The pens for the trial were in good shape. Before the rams were brought in, the pens were cleaned, washed and disinfected with dettol and izal solution.

Animal treatment and adaptability

The entire sheep houses were fumigated using strong fumigant (Dimethoate 40%) against fleas. Prophylatic treatment was given to all the rams: they were dewormed using albendazole oral and ivermectin (vetomech). Treatment against ectoparasites was done with the use of Pour-on solution. Multivitamin was administered to boost appetite. Antibiotic oxyteracycline (long acting) were also administered. The rams were reared in a partitioned pen and were quarantine in the College Farm for two weeks.

Allocation of the animals to pens

The animals were randomly distributed to 5 groups of 3 animals each. Each animal served as a replicate and an adjustment period of a week was allowed for the animals before data collection commences. The feeding trial was commenced in the Month of February and lasted for a period of 70 days.

Feeding of the animals

The animals were fed daily between 8:30 and 9:30 in the morning based on 3% body weight. Left over feeds were weighed each morning before morning feed to facilitate calculation of feed intake. Weighing of sheep was done weekly to determine the weight and feed conversion ratio. Salt lick was also offered *ad libitum***.**

Data collection

Average initial body weight, Average weekly weight gain, average daily and weekly feed intake were taken by weighing scale, feed conversion ratio, feed cost per kg gain, feed cost per kg feed and average final weight gain were taken and analysed. Feed offered to the rams were calculated based on 3% body weight of the rams, while feed intake was determined by subtracting the weight of the left over feed from the weight of the feed offered the previous day.

RESULTS AND DISCUSSION

The average initial body weight when compared with average final body weight were not significantly improved ($P>0.05$) by the inclusion of sugarcane peels 6.00 kg (C). this is in agreement with the report of Agri Farming (2021) who reported that to effectively fatten your ram, there is need to provide them with balanced ration affordable so that they can meet their energy requirements as well providing the protein and minerals needed that will help in maintaining the growth requirement and body weight gain. Meanwhile the average daily feed intake and feed conversion ratio (FCR) were also improved ($P<0.05$). Also effected ($P<0.05$) were average daily weight gain, total body weight gain and average daily water intake. Average daily weight gain (ADWG) 85.71 g/day as recorded from treatment (C) in this study is lower than ADWG of 90.58 g/day reported by Bawala *et al.,* (2008) when they replaced *Leucaena leucocephala* (legume) foliage with sugarcane tops (grass) and fed West African dwarf ram. Weight gain of the rams was found weekly by determining the average weight gain of the rams per treatment for the week and subtracting this from that of previous week. Average total weight gain was calculated by subtracting the average initial weight of individual rams from their average final weights. Total feed intake and weight was determined at the end of the study. Feed Conversion Ratio (FCR) was determined by calculating the ratio of the total of the feed consumed in grams and the total weight gained in grams per treatment. Feed cost per kg gain was obtained from the product of the feed conversion ratio and the cost of feed per kg.

CONCLUSION

This study revealed that the inclusion levels of sugarcane peels from 0 – 100% as replacement for wheat offal in ram diet during fattening improved performance and nutrient intake without affecting the health status of rams. This means the use of sugarcane peels can be used as alternative feed resources that is available and can be utilized. From this fattening trial, it can therefore be recommended that farmers should incorporate sugarcane peels at various percentage levels for ruminants as replacement for energy source especially bran since there is

availability of sugarcane peels especially during the period of its availability. This study revealed the importance of sugarcane peels in ruminants' diets hence the need to improve its proper utilisations.

REFERENCES

Agri Farming (2021). A Publication on Sheep Fattening. https://www.agrifarming.in/sheep-fattening-business-plan-methods-techniques

AOAC (1990). Official Method of Analysis (15th edition). Association of Official Analytical Chemists. Vol. 1 Arlington, Virginia, USA.

Ayoade, J. A., Carew, S. N. and Ameh, A. E. (2007). The feed value of sugarcane scrapping meal for weaner rabbits: Growth, meat yield and cost of production: Proceedings of the 3rd annual conference of the Nigerian Society for Animal Production, University of Calabar, March 18-21, 2007, 227 – 299

Attah, S. (1998). Live performance and live characteistics of goats slaughtered at different weights. Ph.D Thesis, University of Ibadan, Nigeria.

Bawala T. O., Aina A. B. J., Onwuka C. F. I, Oni A. O., Adebisi Y., Alli M. A., (2008). Studies on performance of sheep fed sugarcane *Saccharum officinarum* tops supplemented with varying level of *Leuceana leucocephala* Foliage: Proceedings of the Nigerian Society for Animal Production conference held at OOU, Ayetoro campus, Ogun State – Nigeria, 575 – 578.

Endo, V., Silva Sobrinho, A. G., da Lima, N. L. L. (2014) Evaluation of performance and nutrient intake of lambs fed sugarcane hydrolyzed under different conditions. Semin Ciências Agrárias 35:1515. https://doi.org/10.5433/1679-359.2014v35n3p1515

Ferreira E. M., Pires, A. V., Susin, I. (2014). Lamb performance, milk production and composition from ewes supplemented with soybean oil partially replaced by fish oil blend. Livest Sci 163:51–61. https://doi.org/10.1016/j.livsci.2014.02.009

Saleh G., (2010). Utilisation of Sugarcane Peels By Yankasa Lambs in Savannah Zone. Unpublished M.Sc. Dissertation, Department of Animal Science, Bayero University, Kano

Hassan, W. A. and Idris, A. (2002). A rapid assessment of dressing out Percentage for Red Sokoto Goats *Proc. 7th Ann Conf.* ASAN. pp. 265- 268.

Santos, F., Eichler, P., and Machado, G. (2020) By-products of the sugarcane industry. In: Sugarcane Biorefinery, Technology and Perspectives. Elsevier, pp 21–48

SPSS (2013). *Statistical Package for Social Sciences*, Version 24, Window 32, IBM SPSS Statistics, IBM Corporation, North Castle Drive Armonk, NY 10504-1785. U.S.A.

Van Soest, P. J. and Robertson, J. B. (1980). System analysis for evaluating fibrous feeds. Ed. Pigon. M.J. and Megraham T. workshop Proceedings on Standardisation of Analytical Methodology for Feeds. Ottawa, Canada. Pp 135-143.

Table 1 Composition of the Sugarcane Peels Meal Based Diets

Ingredients (%)	Experimental Treatments				
	A	**B**	**C**	**D**	**E**
Sugarcane Peels Meal	0	8.75	17.5	26.25	35
Wheat offal	35	26.25	17.5	8.75	0
Rice offal	20	15	10	10	05
Cotton seed cake	05	05	10	15	15
Sorghum stover	10	10	10	07	10
Cowpea husk	17	17	12	10	07
Groundnut haulm	10	15	20	20	25
Salt	1	1	1	1	1
Bone meal	2	2	2	2	2
Total	**100**	**100**	**100**	**100**	**100**
Calculated values CP (%)	12.87	12.14	12.11	12.12	11.27

Table 2: Proximate analysis of sugarcane peel meals-based diets fed to fattening sheep

	Treatments					
Parameters	**A**	**B**	**C**	**D**	**E**	**SEM**
Dry matter	98.43	97.66	97.95	98.13	97.87	20.68
Crude Protein	14.88	14.08	13.67	12.14	11.06	4.49
Crude fibre	18.96^{b}	24.64^{ab}	26.28^{a}	28.11^{a}	28.12^{a}	3.17
Ether extract	3.86^{c}	6.22^{ab}	6.54^{ab}	5.04^{ab}	7.44^{a}	1.45
Ash	8.21	11.42	13.24	12.40	13.07	2.81

SEM: standard error of mean ^{a,b,c} Means on the row with different superscripts are significantly ($p<0.05$) different.

Table 3: Performance production of fattening sheep fed diets containing sugarcane peels meal

	Treatments					
Parameters	**A**	**B**	**C**	**D**	**E**	**SEM**
Initial weight (Kg)	31.00	31.00	31.00	31.33	31.33	N/A
Final weight (Kg)	34.67	34.57	37.00	35.77	33.67	2.97
Total weight gain (Kg)	3.67^{c}	3.57^{c}	6.00^{a}	4.34^{b}	2.34^{d}	0.21
Av. daily weight gain (g/d)	52.43^{c}	51.00^{d}	85.71^{a}	62.00^{b}	33.43^{e}	0.01
Av. daily feed intake (g/d)	1045.34	1010.31	1011.82	1058.55	1045.24	38.34
Av. total feed intake (Kg)	73.18	70.72	70.83	74.10	73.17	2.68
FCR	86.41	30.14	15.37	32.28	105.44	67.45

FCR: Feed Conversion Ratio. SEM: standard error of mean $^{a.b,\ c}$ Means on the row with different superscripts are significantly ($p<0.05$) different. N/A = Not Analyzed.