EVALUATION OF THE NUTRITIONAL PERFORMANCE OF BALAMI AND UDA RAMS ON FATTENING PROGRAMME IN THE HUMID TROPICS

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Abstract
The study investigated the influence of breed on the nutritional performance of Balami and Uda breeds of sheep in a Ram Fattening Programme at the Teaching and Research Farm of Obafemi Awolowo University, Ile-Ife, Nigeria, between August and October, 2012. Two hundred and sixty-one rams weighing 30.06 ± 0.31 kg were used in this study. The animals were sorted according to their breed/coat colour namely Balami, Uda Brown and Uda Black and were fed rice-bran based diet at 4% of their body weight. Parameters measured include average daily weight gain, total weight gain and feed efficiency. All data collected were analyzed using the general linear model procedure of SAS Results showed that final live weight, total weight gain and feed conversion ratio (FCR) differ ($P<0.05$) among the breeds. Uda breeds of ram recorded superior ($P<0.05$) daily weight gain and FCR than Balami breeds. Uda black showed improved performance than Uda Brown in terms of FCR, although the difference in their daily weight gain and total weight gain was not significant ($P>0.05$). It can therefore be concluded that Uda breed of sheep holds better prospect in ram fattening enterprise than Balami breed in the South west humid region.

Key words: Balami, Fattening, Uda Black, Uda Brown, Ram

Introduction

The demand for protein in Nigeria, like other developing countries, is far from being met (Matemilola and Elegbede, 2017) and, as such, there is increasing demand for animal protein. The growing demand for meat, largely from ruminant source, also presents opportunities for fattening as well as improved markets for the animals. Fattening of livestock is a highly profitable venture with return of premium to the farmer. Ayantunde *et al.* (2008) reported that in Nigeria, sheep fattening is being done by smallholder farmers while medium and large scale farmers employ feedlot operation systems. Fattening of sheep is affected by short duration of rainfall and long dry season when nutrition is very poor. Fattening is usually practised for three to six months because of the seasonality in demand for such animal like rams but most livestock farmers who engage in fattening as an enterprise are small scale producers who are not equipped with good knowledge of animal nutrition, not to talk of employing modern techniques for better results. Hence, the output of such enterprise is usually suboptimal.

Balami and Uda breeds of sheep are meat breed dominating the small ruminant market in the northern part Nigeria. Balami is a large-sized breed of sheep, usually coated white with a convex face and large droopy ears. Uda is also considered a large-size breed of sheep, with a thin and long tail, ears moderately long and somewhat droopy. The coat colour for Uda is black or brown forequarter with a white hindquarter. Rams of the two breeds generally have curved horns and a hairy mane while the ewes are polled. Balami and Uda rams measure 70 to 80 cm height at the withers and weigh 55 to 60 kg at maturity. The objective of this study was to assess the response of these two breeds of sheep fed rice-bran based diet in a fattening

programme. This study aims to afford small ruminant livestock farmers the privilege of informed decision on the best breed of ram that is most profitable in ram fattening enterprise.

Materials and Methods

Experimental Location: The research was carried out at the Sheep and Goat unit of Obafemi Awolowo University Teaching and Research Farm, Ile- Ife, Osun State.

Animals and management: Rams were sourced from livestock markets in Katsina, Katsina State, Nigeria. A total of 261 rams were employed for this study. The rams were sorted into three groups (breed) comprising Balami, Uda Brown and Uda Black with 87 rams per treatment, where each ram served as a replicate. The rams were managed intensively and all the animals were prophylactically treated against internal and external parasites using Albendazole®. Each ram was fed a rice bran – based concentrate diet at 4% of its body weight. Salt licks were provided *ad libitum* to compensate for any mineral deficiency in the animals. Panicum maximum was offered to the rams at supplemental level once daily, throughout the period of the feeding trial that lasted 56 days, between the month of August and October, 2012.

Chemical Analyses: Feed samples were taken and oven dried at 65ºC until constant weight was obtained for dry matter determination. Other components of the proximate were carried out on dry matter basis following AOAC (2000) procedures. Fibre fractions which include neutral detergent fibre (NDF), acid detergent fibre (ADF) and lignin, were determined according to the procedure of Van Soest (1994). Cellulose was obtained by finding the difference between the values of NDF and ADF, while value for hemicellulose was calculated from the difference between ADF and lignin values.

Statistical analysis: All data collected were subjected to a one – way analysis of variance (ANOVA) using the procedure of SAS (2003). Significant treatment means were compared using the Duncan's Multiple Range Test of the same package.

Results and Discussion

The gross composition of the concentrate diet is presented in Table 1. Rice bran was included at 45% level of the total ingredients that make the concentrate diet, in order to ensure adequate supply of energy to the rams. Table 2 shows the chemical composition of the experimental diet offered to the rams. The crude fibre content of the feed (14.42 g/100 g) is still within the tolerable limit for the rams, taking the advantage of the rumen microbes present in their fore stomach (Devendra and Burns 1980). The dry matter content of the feed (86.56 g/100 g) is similar to the values reported for a number of tropical feed stuffs (Aduku, 1993; Payne and Wilson, 1999; Maigandi and Nasiru, 2006). The value of ash (11.89 g/100 g), which represents the mineral content/status of the feed, is close to the crude fibre content of the feed. High fibre ingredients are reportedly characterized by high content of silica which contributes to ash content (Oyenuga, 1968) which may explain the close relationship of the ash content of the diet to the crude fibre. The value of 16. 76 g/100 g recorded for the crude protein in the diet is sufficiently high to sustain the animal's body functions, as the value is higher than the recommended minimum for proper metabolism for sheep (ARC, 1994; NRC, 1985).

Table 1: Gross composition of the experimental diet

Ingredient(s)	Composition (%)
Maize	10
Wheat offal	40
Rice bran	45
Groundnut cake	5
Total	100
Calculated Analysis	
Crude Protein (%)	15.45
Energy	2510 Kcal/kg

Table 2: Chemical composition of the experimental diet

Parameter(s)	Proportion (g/100 g)
Dry Matter	86.56
Crude Protein	16.76
Crude Fibre	14.42
Ether Extract	10.42
Ash	11.89
Nitrogen Free Extract	40.96
Fibre fractions	
Neutral detergent fibre	58.43
Acid detergent fibre	47.77
Lignin	14.93
Cellulose	32.84
Hemicellulose	10.66

Presented in Table 3 is the performance characteristics of the ram breeds in the fattening programme. The results obtained showed that there was significant difference ($P<0.05$) in the weight gain of the ram breeds. The daily weight gain of the rams ranged ($P<0.05$) from 84.61 g/day in Balami, to 125.47 g/day in Uda Black. Uda Black recorded better value ($P<0.05$) for daily weight gain than Uda Brown but the total weight gain of the Uda variants were similar ($P>0.05$). The total weight gain of the rams followed the same pattern as that of the daily weight gain with Balami recording the least ($P< .05$) value of 7.62 kg and Uda Black the highest weight gain value of 11.25 kg at the end of the fattening period. Similarly, the feed conversion ratio (which is an indicator of the feed efficiency) was best ($P< 0.05$) in Uda Black with a value of 11.21, followed by Uda brown (13.16) and the highest FCR (16.26) was recorded for Balami ram. The feed conversion ratio (FCR) is the amount of feed (kg) an animal needs to consume to gain 1 kg of flesh. The lower the FCR values the more the efficient an animal is, in converting feed to flesh. DM intake was high for Uda Brown and Uda Black respectively compared to Balami, which dropped significantly, as reflected in their lower live weight. The difference in the mean of the final weight obtained for the rams could be associated with their adaptive ability to the wet and humid part of the country, such as the study location, where Uda brown and Uda black demonstrated a better adaptation potential than Balami as the Uda breed recorded lower mortality rate compared to their Balami counterpart during the adaptation period.

Table 3: Performance characteristics of selected breeds of ram in a fattening programme

	Breeds				
Parameters	Balami	Uda (Black)	Uda (Brown)	SEM	Prob
Initial live weight (Kg)	30.17	29.58	30.44	0.31	0.1828
ACDMI (g/day)	1356.90^{c}	1405.91^{b}	1466.31^{a}	11.38	<0.0001
ADWG (g/day)	84.61^{c}	125.47^{a}	111.44^{b}	3.52	<0.0001
Final live weight (Kg)	37.78^{b}	40.87 ^{a}	40.47^{a}	6.30	<0.0001
Total weight gain (Kg)	7.62^{c}	11.29^{a}	10.03^{b}	0.27	<0.0001
Feed Conversion Ratio	16.26^{a}	11.21^{c}	13.16^{b}	1.63	0.001

ADWG: *Average Daily Weight Gain; ACDMI: Average Concentrate Dry Matter Intake; SEM: Standard Error of Mean; Prob; Probability level*

Conclusion

Ram fattening, as an enterprise, is feasible in the humid tropics. Of the two major large–sized breeds of sheep that can be employed in ram fattening programme, Uda breed gives superior performance in terms of feed efficiency and weight gain when compared to Balami rams.

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References

Aduku, A.O. (1993). Tropical Feed Stuff Analysis. Ahmadu Bello University press, Samaru, Zaria. 143pp.

A.O.A.C. (2000), Official Methods of Analysis. 16th edition. Association of Official Analytical Chemists. Washington, DC., USA.

Agricultural Research Council (1994). The Nutrient Requirement of Ruminant Livestock. Technical Review by an Agricultural Research Council Working Party. 249pp.

Ayantunde, A.A., Fernandez-Riveria, S. and Dan-Gomma, A. (2008). Sheep fattening with groundnut Haulms and Millet bran in the west African Sahel Sheep. *Animal nutrition* 2(5): 21-25.

Devendra, C. and Burns, M. (1980). In "Goat production in the tropics". Commonwealth agriculturalBureaux, Slough, UK.

NRC (1985). Nutrient Requirement of Sheep (6th revised edition). National Academy Press, Washington D.C., USA. 109pp.

Maigandi, S.A. and Nasiru, A. (2006) Replacement Value of *Faideherbia albida (Fap)* Fed to Uda Sheep in semi-arid zone, Nigeria. Proceedings of 31st Annual Conference of Nigerian Society of Animal Production held at Bayero University, Kano, Kano State, Nigeria. Pp 31: 439-443. 12th – 15th March, 2006.

Matemilola, S. and Elegbede, I. (2017). The Challenges of Food Security in Nigeria. OAlib. 04. 1-22.10.4236/oalib.1104185. {accessed online on 28th December, 2018}.

Muhammad. N., Tukur. H. M., Maigandi. S.A. and Daneji. A.I. (2011). Performance and cost of production of fattening Uda sheep fed diets containing different energy levels in a semi-arid Environment. *International Journal of Applied Agricultural and Apicultural Research* IJAAAR 7 (1&2): 79-85.

Oyenuga, V. A. (1968). Nigerian Feeds and Feeding Stuffs: their chemistry and nutritive values. Ibadan University press, Ibadan, Nigeria. 99pp

Payne, W. J. A. and Wilson, R. T. (1999). An Introduction to Animal Husbandry in the Tropics (5th edition). Cambridge University Press, London. 446 pp.

SAS. (2003). Statistical Analytical System Institute SAS/STAT User's guide. Statistics. SAS Institute, Cary, North Carolina, USA.

Van Soest, P., Robertson, B.J., and Lewis, B.A. (1994). Methods for dietary fibre, neutral detergent fiber and non-starch polysaccharides in relation to animal nutrition. 71:3583-3597.