Research Paper

Effect of Different Dietary Protein Levels on Performance of Indigenous Breed of Yankasa Rams in North Western Nigeria

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ABSTRACT: *This study aimed to evaluate the effects of varying dietary protein levels on the growth performance of Yankasa sheep, with a focus on parameters such as weight gain, body measurements, and overall development. The experiment utilized the Yankasa breed of sheep and employed three treatment groups with different protein levels: T1 (13% protein), T2 (9.33% protein, serving as the control and also 25% less than treatment 1), and T3 (16.26% protein and 25% greater than treatment 1). Cotton seed cake was utilized as the primary source of protein in the diets. Measurements of initial weight, final weight, weight gain, body length, height at wither; girth circumference, height at rump, neck length, and neck circumference were taken to assess the growth performance of the sheep. Analysis of variance was performed to determine significant differences among the treatment groups. The results indicated that, overall, there were no significant differences in most parameters among the treatment groups, except for the height at wither. Height at wither was significantly higher in the control group (T2) compared to T1 and T3. These findings suggest that the lower protein level in the control group may have contributed to a slightly reduced height at wither in Yankasa sheep. In conclusion, this study contributes to the understanding of the relationship between dietary protein levels and growth performance in Yankasa sheep. Further research is recommended to explore additional dietary interventions and compare findings with existing literature to enhance knowledge of Yankasa sheep growth and nutrition. Such endeavors will aid in developing strategies to optimize the growth and productivity of this breed, benefiting sheep farming and the agricultural sector as a whole.*
KEYWORDS: *Cotton seed cake, Protein requirement, Katsina, Yankasa sheep.*

I.   INTRODUCTION

Yankasa Rams are found all over Nigeria and in most rural homes. Its importance in livestock production cannot be over emphasized. They are major sources of meat supply to Nigeria households in addition to being a source of employment and income especially in the rural arrears. The meat is palatable and rich with no cultural and religious hindrance to its consumption. Rams meat (mutton) is lower in subcutaneous and intramuscular fat with higher muscle shear force compared with beef meat hence it's being attractive and healthier for human consumption. Sheep production in Nigeria is still not well developed. Sheep are predominantly reared under extensive system which is characterized by low productivity. One of the major problems affecting sheep production in Nigeria is poor nutrition due to unavailability of good quality feeds especially protein. Even when feeds are available, the protein requirements of Yankasa rams remains unknown thus leading to inefficient utilization of already scare feeds. Protein is very necessary for the productivity of animals. They are however very expensive and generally unaffordable to most farmers. There is therefore need to determine the protein requirement of Yankasa rams in order to make efficient use of scare protein. Therefore, this study shall be conducted to investigate the effect of feeding different levels of protein on general performance of Yankasa Rams in North Western Nigeria. The main aim of the study is to determine the effect of feeding different levels of protein on general performance of Yankasa Rams in North Western Nigeria.

Sheep are very important source of livelihood for farmers in Nigeria. They are found in all regions of the country with the North Western region having the highest sheep population in the country [1]. In Nigeria, the productivity of the Rams is low like many other countries in the tropics. This has been noted to have

impacted production and farmers' income negatively. Feeding both in quantity and quality has been recognised as one of the major problems hindering the productivity of Rams in the proposed area of study with protein being one of the limiting nutrients [2]. Protein has been recognised as one the limiting nutrients in ruminant production. Insufficient intake of protein results in poor growth, late sexual maturity, abortion in pregnant goats, poor birth weight etc. However, protein requirements by animals depend on many factors such as species, breed, age, physiological status and environmental factors. Therefore, attainment of optimum productivity in Rams production requires feeding them with feeds that contains crude protein that will satisfy their requirement. However, there is limited information concerning the protein requirements of Yankasa Rams in North Western Nigeria. Farmers depend mostly on information from areas with different climatic condition especially the temperate regions for determination of crude protein requirement in goats. [3] identifies the nutrient requirements of the international temperate breeds to be 14.5 to 26.2% and 10 to 14% for Yankasa Rams which may not be applicable to our breeds, because of differences in growth potential and the environmental factors. Therefore, this study shall be conducted to investigate the effect of feeding different levels of protein on general performance of Yankasa Rams in North Western Nigeria.

II. METHODOLOGY

2.1 Location

The experiment was conducted at the Ruminant Animals Teaching and Research Farm of Agricultural Education Department, Federal College of Education Katsina.

2.2 Design Experimental Animals and their management

Nine growing male Yankasa Rams were purchased from village markets in Katsina State and used for the growing and fattening phase of the experiment. The experimental animals were managed intensively and group fed with cowpea hay and wheat offal before the commencement of the experiment.

Formulations of experimental diets

Experiment consisted of three dietary treatments with 13%, 9.33% (control) and 16.26% protein inclusion levels. Feed ingredients used to formulate the diets include cotton seed cake, groundnut hay, maize, corn stalk, maize bran, bone meal, salt. These were sourced from local markets around Katsina and its environment.

2.3 Animal Management

Experimental animals consisting of Nine (9) Yankasa Rams were housed in individual pens measuring 2m x 1m. The pens were cleaned and disinfected. A completely randomized design (CRD) was used in the experiment. The experimental animals were divided into three experimental treatments containing three (3) experimental animals per treatment with each of the research. They were then allotted to the treatments and offered water and feed ad libitum in the morning and evening for 84 days. Salt lick was offered ad libtum and other husbandry management were be strictly adhered to.

2.4 Data collection

The experimental pens were cleaned every day before feeding. The animals were weighed prior to the commencement of the experiment and weekly between 7.00 and 8.00 am after feed withdrawal for 14-16 hours to avoid error due to gut-fill. Daily records of feed intake were taken throughout the 84 days of feeding trial by weighing the feed offered and the left over the following morning.

Thoroughly mixed representative samples of the experimental diets was analysed for chemical composition, acid detergent fibre (ADF), neutral detergent fibre, ADL, hemicellulose and cellulose by [4].

At the end of the experiment, the body parameters such as body length (BL), heights at withers (HW), girth circumference (GC), height at rump (HR), neck length (NL) and neck circumference (NC) were measured. These were determined as follows:

Body length (BL) was measured using tape rule as the distance from the occipital protuberance to the base of the tail.

Height at withers (HW) was obtained by using platform upon which each animal shall be placed and shall then be measured as the distance from the surface of the platform to the withers using a meter rule.

Girth circumference (GC) was determined by taking the measurement of the circumference of the chest with a tape.

The height at rump (HR) was the distance from the surface of the platform to the rump using a measuring rule.

Neck length (NL) was the distance from the lower jaw to the point of the shoulder using tape rule.

Neck circumference was gotten by measuring the distance round the neck below the lower jaw using the tape rule.

2.5 Data Analyses

The data generated from the study were analyzed using analysis of variance (ANOVA) in Statistical Package for Social Sciences Package (SPSS 20). Duncan multiple range tests (DMRT) was used to compare treatment means for significant difference among treatments means [5].

III.   RESULTS AND DISCUSSION

This experiment aimed to evaluate the impact of different dietary protein levels on the growth performance of Yankasa sheep, a breed known for its resilience and productivity. The sheep were divided into three treatment groups, each with varying protein levels. The control group, T2, had a protein level of 9.33%, which is 25% less in protein content than treatment 1, while T1 and T3 had protein levels of 13% and 16.26% with 25% more protein content than treatment 1, respectively. Cotton seed cake was used as the primary protein source in the diets. Several parameters were measured throughout the experiment, which include initial weight, final weight, weight gain, body length, height at wither, girth circumference, height at rump, neck length, and neck circumference. Interestingly, the results showed no significant differences in most of the parameters among the treatment groups, except for the height at wither. Result of the experiment is presented in Table 1 below.

Table1: Growth performance of Yankasa sheep

Parameter	13%CP	9.33%CP (25% less)	16.26%CP (25% more)	SEM	*P-value*
Initial weight	18.67	19.67	19.00		NS
Final weight	22.29	22.67	21.92	0.267	NS
Weight gain	6.83	6.83	6.17	0.750	NS
Body length	79.67	75.00	77.67	1.934	NS
Height at wither	59.00[a]	64.67[b]	61.00[a]	0.839	<0.01
Girth circumference	66.33	66.67	74.33	3.972	NS
Height at rump	58.33	74.33	60.33	4.269	NS
Neck length	26.33	22.33	23.33	1.000	NS
Neck circumference	29.67	41.67	34.00	5.235	NS

Height at wither was significantly higher in the control group (T2) compared to both T1 and T3. This finding suggests that a lower dietary protein level might have contributed to a slightly reduced height at wither in Yankasa sheep.

IV.   CONCLUSION

In conclusion, while the experiment indicated no significant differences in most parameters, the lower protein level in the control group appeared to have a slight impact on the height at wither of Yankasa sheep.

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