

GROWTH PERFORMANCE OF YANKASA RAMS FED DIGIT GRASS (*Digitaria eriantha*) HAY SUPPLEMENTED WITH DIFFERENT PROTEIN SOURCES

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ABSTRACT

The study evaluates the performance of Yankasa rams fed basal *Digitaria eriantha* hay supplemented with different protein sources. Sixteen (16) growing Yankasa Rams with average live weight of 24.40kg were allotted to four (4) dietary treatments as diet without supplementation (normal diet, diet supplemented with CSC, GNH, CPH designated as T1 (control), T2, T3, and T4, respectively. The experiment was designed in a completely randomized design (CRD), replicated (4) times. The results of growth performance showed that there were significant ($P < 0.05$) differences in the Total weight gain (TWG) and Average daily gain (ADG) across treatments. Inclusion of 30% GNH was the best and cheaper. Thus, it is recommended that *D. eriantha* could be fed as basal diet to Yankasa rams supplemented with up to 30% CSC, 30% GNH, and 30% CH levels. Inclusion of 30% GNH was better and cheaper and therefore recommended.

Keywords: Performance, Nutrient Intake, *Digitaria eriantha* and Yankasa Rams

DESCRIPTION OF PROBLEM

Ruminants largely depend on forages which are essential to maintain their health and production at various stages of their growth and development (7). One of the major problems facing ruminant livestock production in Nigeria is nutrition (4). Another factor limiting the productivity of small ruminants in developing countries is over dependence on low digestible feeds which during the dry season cannot meet even the maintenance requirement of these animals (12). Also, majority of ruminants in tropical Africa are raised on natural pasture which decline rapidly in quality and quantity during the dry season and such changes in nutritional status result in very irregular growth and marked fluctuation in seasonal live weights (13).

MATERIALS AND METHODS

Description of Study Area

The experiment was conducted at the Aliko Dangote University of Science and Technology Teaching and Research Farm, Gaya (11°51'N; 9°20'E; altitude 430m above sea level) in the semi-arid Kano, Nigeria. The area is characterized by a defined wet season which normally begins in May and ends in October. The mean annual rainfall is about 800mm, while temperature ranges between 20°C in December to 43°C in May (8). The soil of the study area is loamy sand with little organic matter (1).

Acquisition of the Experimental Materials

Digitaria eriantha hay was obtained from the National Animal Production Research Institute (NAPRI) Shika, Zaria. The other feed ingredients in the diet includes Ground nut haulms, cotton seed cake, cowpea husk, rice milling residues, wheat bran. Sorghum chaff and salt were

purchased from Wudil market. The experimental animals (Yankasa rams) were also purchased from the livestock market in Wudil.

Experimental Animals and their Management

Sixteen (16) growing Yankasa rams with an average live weight of $24.4 \pm 0.1\text{kg}$ were quarantined for two weeks and ear tagged for identification. Prior to commencement the study, the animals were given prophylactic treatments. They were dewormed with albendazole (2.5%) against of endo-parasite, then. Ivermectin was given at 0.1/10 kg body weight subcutaneously for ecto-parasites. Oxytetracycline 20% (LA) was given at 1ml/10kg body weight as broad spectrum antibiotic against bacterial infection (9).

Experimental Design and Treatments

The experimental animals were balanced by weight and allotted to four (4) treatments in a completely randomized design (CRD), replicated four (4) times. The treatments were T_1 (D. *eriantha* with RMR + WB and SC) as control, T_1 (D. *eriantha* supplemented with WB + RMR + SC + CSC), T_2 (D. *eriantha* + WB + RMR + SC + GNH and T_3 (D. *eriantha* + WB + RMR + CPH) T_4

SC= sorghum chaffs, RMR = Rice Milling Residue, WB = Wheat Bran CSC = Cotton Seed Cake, GNH = Groundnut haulm, CH = Cowpea husk.

Experimental Procedure

The experimental animals were offered *Digitaria eriantha* hay *ad libitum* in the morning. They were later supplemented with the experimental supplements at 1.5% BW in the evening daily (4). Water was provided *ad libitum*

Performance Parameters measured

Feed Intake (g/day)

Determined by subtracting the left over from the total feed offered.

Live Weight changes (Kg)

Obtained and monitored the changes on weekly basis, in the morning before feeds were offered (F 2-F1)

Weight gain (Kg)

Measured by the difference between initial and final weights. (WG FBW-IBW)

Average daily gain (g/day)

Average daily gain (ADG) was obtained by dividing total weight gain by the number of the experimental period (ADG= WG ÷ Number of days of the experimental period)

Feed efficiency (%)

Feed efficiency (FE) calculated as ratio of feed intake to weight gain to total (FE=WG÷TFI)

Statistical Analysis

The data obtained were analyzed using the General Linear Model (GLM) of SAS (11) and significant differences in the treatment Means were separated using Duncan Test (3).

RESULTS AND DISCUSSION

Growth performance of Yankasa Rams fed basal *Digitaria eriantha* hay supplemented with different protein sources

Feeding *Digitaria eriantha* hay supplemented with diet containing 30% GNH resulted in appreciable increase in final body weight by 3.33kg (T_3). The nutrient intake and live weight gain were higher in animals supplemented with either cowpea or groundnut haulms than straw indicating the supplementation of these legumes to a basal diet of rice straw boosted nutrients intake and growth performance (2). Feed to gain ratio were lower in treatment T_3 and T_4 indicating that animals in these treatments were more efficient in utilization of feeds. This finding agrees with that of (5). The Average daily gain (ADG) values obtained in the current study was lower than 94.60g/day reported by (6) for Yankasa Rams fed ground nut hay and maize brans. This might be due to differences in the composition of the experimental diet, location or as a result of lower feed conversion ratio. However, higher value of 1661.18g/day for Yankasa sheep fed sorghum stover supplemented with dried poultry litter. The differences may be due sex of the experimental animals or feed ingredients. However, Total weight gain (TWG) reported in this study 3.33/kg, is lower than the report of (6) who reported 6.75 kg for growing

Yankasa Rams fed graded levels of baobab (*Adonsonia digitata*) seed meal. Also lower with the report of (10) who recorded 4.94 to 6.75kg for

fattening Kano brown goat. The variation could be due to differences in the experimental diet and or procedure.

Table: 1. Growth Performance of Yankasa Rams fed basal *Digitaria eriantha* hay supplemented with different protein sources.

Parameters	Treatments				SEM
	T ₁ (0%)	T ₂ (30%CSC)	T ₃ (30%GNH)	T ₄ (30%CPH)	
IBW (kg)	24.33	24.33	24.33	24.67	2.489
FBW (kg)	26.67	27.67	27.80	26.67	2.517
TWG (kg)	2.31 ^b	2.67 ^{ab}	3.33 ^a	2.33 ^b	0.333
ADG (g/day)	32.29 ^b	38.14 ^{ab}	45.57 ^a	32.29 ^b	4.763
TFI (kg)	32.83	31.78	35.60	37.37	3.753
ADFI (g/day)	468.80	501.63	508.53	533.67	49.714
FE (%)	0.08	0.08	0.09	0.06	0.012

^{abc} means within the same row with different superscripts differs significantly (P<0.05). SEM= Standard error means. IBW- Initial body weight, FBW- Final body weight, TWG- Total weight gain, ADG- Average daily gain, FE- Feed efficiency.

CONCLUSIONS AND APPLICATION

Feeding basal *D. eriantha* hay supplemented with diet containing 30% GNH increased live weight of the Rams by 18.084. Inclusion of 30% GNH and 30%CH resulted in the enhancement of the nutrients of the experimental diet. Supplementation of 30% CSC 30% GNH and 30% CH to Yankasa Rams resulted in an improvement of weight gain and nutrient intake but supplementation of 30% GNH was found to be the best. Feeding *D. eriantha* as a basal diet and supplementation with 30% CSC, 30% GNH and 30% CH to Yankasa Rams has no deleterious effect on the health status of the experimental animals. Hence, feeding *D. eriantha* as a basal diet to Yankasa Rams supplemented with 30% CSC, 30% GNH and 30% CH level, but inclusion of 30% GNH was better and cheaper, therefore recommended.

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