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Dry Matter Intake, Water Intake and Live Weight Changes of Yankasa Sheep Fed Browse Plants

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Abstract: The experiment was conducted in the Department of Animal Production, Teaching and Research farm, College of Agriculture Jalingo, Taraba State, the browse plants fed were T1=*Ficussycomorus, T2=Gmelinaarborea,* T3=*Ziziphusmauritianaand T4=Danieliaoliveri,* with crude protein levels of 11.36, 13.01, 11.16 and 11.16 respectively, the feed was offered ad lib to allow 15-20% refusal. the daily dry matter intake of the four browse plants fed with the ranges of 218 g/h/d-184g/h/d. Treatment 1 has the highest dry matter intake of 218g/h/d while Treatment 4 has the least 184g/h/d. There is no significant difference (P>0.05) between Treatments. The mean water intake showed an intake range of 2.27l/h/d-1.22l/h/d, with treatment 3 having the highest intake, while treatment 2 has the least. T_3 differs significantly (P<0.05) with T_1, T_2 and T_4. While there is no significant different (P>0.05) between T_1, T_2 and T_4. The live weight gain is in the range of 900g-300g with T_2 having the highest gain of 900g/h and T_4 has the least gain of 300g/h. T_2 differs significantly (P<0.05) with T_1, T_3 and T_4 while there is no significant different between T_1 and T_4.

Key words: Dry Matter · Water · Intake · Weight Gain · Yankasa Sheep

INTRODUCTION

Sheep raising system in Nigeria is mostly based on rearing Sheep walk for long distances looking forfeed [1]. The main feed resources for animals are native grasses, legumes that occur naturally in grassland, tree leaves and crop residues. Sheep production is limited if comparedto large ruminants, while it considered as important source ofincome to their holders, function as a bank and as a meat or protein source and are also used in traditional and religious ceremonies. Recently, the most serious problem affecting small ruminants is the feed shortages, which occurs especially in intensive crop production areas.

In Northern part of Nigeria, ruminants suffer greatly due to malnutrition. The nutrients available in the grass during the dry season do not meet their maintenance level.Animals depend on other sources of non conventional supplement diet. Therefore, in the tropics, browse plants have been found to give significant potential in terms of adaptability, productivity and acceptability for ruminants which balances the difficulties of feed shortages in the dry season [2]. Some browse forages contain secondary compounds which may be toxic when fed adlib [3]. This study aims toidentify the available browse inthe locality and find out how best its productive capability in terms of animal nutrition can be exploited, reducing the risk of the toxic substances they possessed.

MATERIALS AND METHODS

Feeding and Management: Intake is determined by quantity of browse and the left over recorded. Feeding was regimented twice daily (8.00am and 5.00pm). Water consumption and weekly body weight gain was also recorded.

Experimental Site: The experiment was conducted at the Department of Animal Production Teaching and Research farm, College of Agriculture Jalingo, Taraba State, Jalingo. It lies on latitude 8°.50 North and longitude 11°.25

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East, in the Guinea Savannah zone of North-east Nigeria with a mean annual rainfall of 950mm and a mean monthly temperature of 32°C. The tropical climate marked by dry and rainy seasons. The rainy season commences in April and ends in late October.

Animals and Their Management: Four Yankasa rams weighing between 16 and 19kg and aged between 6 and 9 months were used. The rams were purchased fromIware Livestock Market in Ardo-kola Local Government Area of Taraba State. Each animal was kept in individual metabolism cage and was fitted with a fabricated bagco bag for faecal collection. Rams were quarantine for period of two weeks during which they were dewormed with albendazole against endoparasites. The experiment lasted for a period of 8 weeks.

Treatment and Experimental Design: Four Animals of similar average live weights were randomly assigned to 4 treatmentsin a 4 x 4 Latin square design. During the experiment, rams were fed freshly cut foliage of the browses *Ficussycomorus*for the first treatment, *Gmelinaarborea*,for the second treatment, Ziziphusmauritianafor the third treatment and Deniellaoliveri; for the fourth treatment.

Measurements

Feeding: The basal diets were used as sole feed for all treatments. Intake was determined by weighing the quantity of browse offered and the minus the left over. Feeding was regimented twice daily (8.00am and 5.00pm). Water intake was also recorded.

Live Weight: The animals were weighed at the beginning of the experiment to determine initial weight gain and subsequently at weekly intervals. The difference between the previous week and the current week gave the changes in live weight.

Digestibility: During the second week of adaptation, rams were accustomed to the faeces collection harnesses for seven days. Mineral supplement was not given throughout the experiment. The feed offered and refused for each animal were weighed and recorded daily. Samples were taken daily and bulked until the end of collection period, dried at 65°C for 24 hours, ground through a 1mm screen and used for chemical analysis. Daily faecal excretions were collected in bagco sacks fabricated bags fitted to each sheep. The faeces were collected at 8.00am, weighed and recorded. 10% aliquot sample from each sheep was collected daily. A sub-sample of daily faeces output taken were dried for 24 hours at 100°c for dry matter determination. The remaining faecal sample was bulked for each sheep and kept under refrigeration for subsequent analysis. Urine was collected and a 10% aliquot sample was taken daily in labeled bottles, preserved with 2-3 drops of concentrated sulphuric acid (H_2SO_4) and stored in a refrigerator.

Statistical Analysis: The data collected were subjected to analysis of variance using a 2 x 4 factorial experiment. Least Significance Difference (LSD) was used to separate the means where significance difference was observed, Steeland Torrie [4].

RESULT AND DISCUSSION

Dry Matter Intake: The daily dry matter intake of the four browse plants fed is summarized in Table (1) with the ranges of 218 g/h/d-184g/h/d. Treatment 1 has the highest dry matter intake of 218g/h/d while treatment 4 has the least 184g/h/d. There is no significant difference (P>0.05) between treatments Adegbola [5] reported that consumption of browse is usually low when fed as sole feed and digestibility may be over estimated. The highest intake of 218g/h/d is in contrast to the work of Carew *et al.* [6] who reported dry matter intake of forest goat in Nigeria to about 850g/h/day as compared to 600g/h/day for Savannah goats.

Water Intake: The mean water intake as shown in Table 1 showed an intake range of 2.27l/h/d-1.22l/h/d, with treatment 3 having the highest intake, while treatment 2 has the least. McFarlane *et al.* [7] reported that sheep do not need to drink water when pasture has 60-70% moisture. El-Badawi and Gado [8] similarly reported that type of animal, feed and weather variable especially temperature have influence on water consumption. T_3 differs significantly (P<0.05) with T_1, T_2 and T_4. While there is no significant different (P>0.05) between T_1, T_2 and T_4.

Live Weight Changes: The live weight changes of rams fed browse plants is summarized in Table 1. The live weight gain is in the range of 900g-300g with T_2 having the highest gain of 900g/h and T_4 has the least gain of 300g/h. The low weight gain could be attributed to low dry matter intake, low water intake and low browse quality. The value of 16g/h/d for T_2 is higher than what was reported by Tanner *et al.* [9].

Table 1: Dry matter intake, water intake and live weight changes of Yankasa Sheep fed browse plants

	Treatments				
Parameter	1	2	3	4	SEM
Total dry matter intake (g/d)	218	213	200	184	0.118
Total water intake (l/day)	1.33	1.22	2.27	1.45	0.097
Initial live weight (kg)	10.2	10.6	10.4	10.6	0.032
Final live weight (kg)	10.7	11.5	11.1	10.9	0.025
Live weight gain (g)	500	900	600	300	0.021

Means on the same row with different superscripts are significantly different (P<0.05).

SEM=Standard Error of Means

1. = *Ficussycomorus* (Baure)
2. = *Gmelinaarborea* (Malina)
3. = *Ziziphusmauritiana* (Jujube)
4. = *Daniellaoliveri* (Maje)

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