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# BODY MORPHOMETRIC MEASUREMENTS OF UDA RAMS FED GRADED LEVELS OF SWEET POTATO AND CASSAVA PEELS

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**ABSTRACT**

*This research was carried out to determine the body morphometric traits of Uda rams fed graded levels of sweet potato and cassava peels. A total number of 12 Uda rams with an average weight 0f 24kg were used with three replicates per treatment. The experimental animals were fed with different inclusion levels of sweet potato (SPP) and cassava peels (CSP) at 0%, 20%SPP, 20%CSP and also (20:20%) SPP & CSP as treatments A, B, C and D respectively. The feeding trial lasted for 12 weeks during which body morphometric traits were monitored. Results revealed that, proportionate change in morphometric traits were higher (P<0.05) on loin length, horn length, body length, leg length, height at withers and tail length in treatment D with 5.33, 4.69, 4.67, 4.67, 4.00, respectively . Similarly, treatment A had higher (P<0.05) with neck length and back length with 4.67 and 3.33 respectively.Hence, it can be concluded that, feeding both sweet potato and cassava peels at 10% each improves body morphometric traits without adverse effect on fattening rams.*

## INTRODUCTION

Agro-waste features high concentrations of non-starch polysaccharides (NSP) such as cellulose, mannan and xylan which could be served as important sources of energy for ruminant. These substances demonstrate their nutritional value and have been widely used as a means of reducing the cost of convectional feeds (Tbbo et *al*., 2002).sweet potato and cassava peels are the most common agro-waste produced in the study area. This by-product is produced as a result of cassava and potato processing. Anti-nutritional effects of NSP in many agro-wastes are also due to the presence of insoluble polysaccharides that enhance the viscosity in the digestive tract and reduce nutrient absorption. Rumen microbial degradation of both soluble and insoluble NSP in ruminants can improve overall energy utilization. In addition, agro-waste do not only serve as energy source but also provide some necessary vitamins. Small ruminants such as sheep and goat are widely reared in a crop-livestock farming systems and are distributed across different agro-ecological zones of Nigeria. Sheep and goats with their higher

reproductive capacity and growth rates are ideally suited to production by resource-poor smallholders (Devendra, 1999). Crop residues and agro-industrial by-products are available and farmers found some of them useful in livestock feeding but restricted due to inadequate information on their feeding values , therefore it has become imperative for ruminant nutritionist to investigate the ways of utilizing these feedstuffs that are of low nutritional needs to man.Theobjective of the study is to

find out body morphometric measurements of Uda rams fed graded levels of sweet potato and cassava peels.

## MATERIALS AND METHODS

### *Description of Experimental Area*

The research was conducted at the Livestock Teaching and Research Unit, Department of Animal Science, Kebbi State University of Science and Technology, Aliero. The Farm is located around the University Campus. The study area is located in the Sudan Savannah agro ecological zone of Nigeria, and it experiences serious moisture deficiency for greater part of the year. The climate of the area encourages the production of crops and rearing of animals both during rainy and dry seasons, which makes majority of the inhabitants to choose peasant farming as an occupation. The study area is located on latitude 11.6781° north and longitude 4.0695° east of the equator. The climate of the area is generally characterized by high temperatures ranging between March and May, with annual temperatures varying between 38°C to 42°C. The area experiences hamattan wind between late November to early February, with temperatures as low as $23^0$C (NPC, 2006)..

### *Experimental feed Preparation*

Feed ingredients used in the preparation of the experimental diets include sweet potato and cassava peels which were purchased from Dodoru market. Other feed ingredients were purchased from the market. Four complete experimental diets were formulated using 0, 20, 20 and 10:10 graded levels of Cassava peels and Sweet potato peels and are designated as A, B, C and D respectively

**Table 1: Gross Composition of the Experimental Diets**

| Ingredients | Treatments | | | |
|---|---|---|---|---|
| | 0% | 20%SPP | 20%CSP | 20%SPP&CSP |
| Maize | 21.46 | 5.99 | 7.70 | 0.00 |
| Sweet potato peels | 0.00 | 20.00 | 0.00 | 20.00 |
| Cassava peels | 0.00 | 0.00 | 20.00 | 20.00 |
| C/ husk | 13.55 | 12.75 | 12.30 | 8.00 |
| Soya FF | 4.98 | 8.98 | 7.50 | 11.98 |
| Rice offal | 16.65 | 11.04 | 11.25 | 20.52 |
| C/ hay | 39.86 | 37.75 | 37.75 | 16.00 |
| Salt | 0.50 | 0.50 | 0.50 | 0.50 |
| Bone meal | 2.50 | 2.50 | 2.50 | 2.50 |
| Premix | 0.50 | 0.50 | 0.50 | 0.50 |
| **TOTAL** | **100** | **100** | **100** | **100** |
| Calculated Kcal/kg ME | 2235.44 | 2202.42 | 2209.75 | 2228.42 |
| Calculated CP % | 12.14 | 12.20 | 12.04 | 12.27 |
| Calculated CF % | 22.17 | 21.08 | 23.93 | 16.42 |

Note: SPP Sweet potato peels, CSP Cassava peels.

### *Experimental Procedure and Design*

A randomized complete block design (RCBD) was used in the experiment (Steel and Torrie, 1980). Three Uda rams were allocated to each dietary treatment. The feeding trial lasted for 84 days during which feed intake, water, and live weight changes will be monitored.

### Management of Experimental Animal

Twelve (12) Uda rams were used for the experiment. The animals were quarantined, dewormed with Albendazole (12.5gm/kg body weight) sprayed with Triatic against ecto-parasites and treated with oxytetracycline (Broad Spectrum antibiotics) prior to commencement of experiment.

Measurement of Morphometric Traits

A total twelve (12) Uda rams were randomly sampled based on absence of physical deformity, health and alertness of the animals.Nine morphometric traits were measured with a tape at the beginning of the experiment, and at interval of two weeks.

*Data Analysis*

The data obtained from this experiment was subjected to the analysis of variance (ANOVA) and the mean were separated using Duncan multiple range test (SPSS,2007).

**RESULTS AND DISCUSSION**

**Table 2: Body Morphometric Traits of Uda Rams Fed Different Inclusion Levels of Sweet Potatoes and Cassava Peels**

| Parameters | Treatments | | | | |
|---|---|---|---|---|---|
| | A (0%) | B(20%) | C(20%) | D(40%) | SEM |
| Initial body length | 55.07 | 54.33 | 55.0 | 53.33 | 2.33 |
| Final body length | 59.00 | 57.07 | 59.33 | 58.00 | 1.20 |
| Change in body length | 3.33 | 3.33 | 4.33 | 4.67 | 0.88 |
| Height at withers | 23.69$^{b}$ | 26.33$^{c}$ | 27.00$^{a}$ | 26.67$^{a}$ | 0.78 |
| Final height at withers | 27.00$^{b}$ | 28.33$^{ab}$ | 30.00$^{ab}$ | 30.67$^{a}$ | 0.92 |
| Change in height at wither | 3.35$^{ab}$ | 2.00$^{b}$ | 3.00$^{ab}$ | 4.00$^{a}$ | 0.52 |
| Neck Length | 16.01 | 17.33 | 18.67 | 17.00 | 0.92 |
| Final Neck length | 21.33 | 19.69 | 22.00 | 21.33 | 1.62 |
| Change neck length | 4.67 | 2.33 | 3.35 | 4.33 | 1.55 |
| Chest girth | 31.00 | 30.67 | 31.33 | 31.67 | 1.13 |
| Final chest length | 33.67 | 33.33 | 35.33 | 34.00 | 1.41 |
| Change in chest length | 2.67$^{b}$ | 2.67$^{b}$ | 4.00$^{a}$ | 2.33$^{b}$ | 0.39 |
| Loin length | 31.33 | 30.00 | 32.33 | 29.69 | 1.66 |
| Final loin length | 34.33 | 31.67 | 35.33 | 35.00 | 1.45 |
| Change in loin length | 3.00$^{b}$ | 1.67$^{b}$ | 3.00$^{b}$ | 5.33$^{a}$ | 0.53 |
| Horn length | 8.50 | 8.67 | 10.33 | 10.67 | 3.12 |
| Final horn length | 11.33 | 11.33 | 13.00 | 15.00 | 3.83 |
| Change in horn length | 2.83$^{ab}$ | 2.67$^{b}$ | 2.67$^{b}$ | 4.69$^{a}$ | 0.51 |
| Leg length | 23.33 | 18.33 | 20.69 | 20.67 | 0.85 |
| Final leg length | 24.33 | 22.33 | 23.67 | 25.33 | 1.35 |
| Change in leg length | 3.00 | 4.00 | 3.00 | 4.67 | 0.62 |
| Back length | 32.00 | 32.00 | 32.00 | 31.00 | 0.58 |
| Initial back length | 35.33 | 34.33 | 35.67 | 34.67 | 1.55 |
| Change in back length | 3.33 | 2.33 | 2.67 | 2.67 | 0.65 |
| Tail length | 36.67 | 32.33 | 35.33 | 33.69 | 1.88 |
| Final tail length | 37.67 | 34.00 | 36.00 | 35.67 | 1.20 |
| Change in tail length | 1.00 | 1.67 | 0.67 | 2.00 | 0.67 |

**abc=** mean values with different superscripts along the same rows are significant (P<0.05)

Body morphometric traits of Uda rams fed different inclusion levels of Sweet potatoes and Cassava peels is presented in Table 2. Change in morphometric traits has significantly ($p<0.05$) affect all the traits across all the treatments. The general trend observed that change in morphometric traits is more increased at treatment D where there is a combination of sweet potato and cassava peels at 10% each. The higher body measurements observed for rams fed combination of Sweet Potato Peels & Cassava Peels 20% each compared to those fed sweet potato peels only could be due to lower weight gain of the latter. This suggests

that combination of sweet potato and cassava peels in a ration might have influence in the growth rate of the animals. Devendra (1988) showed that level of nutrition could influence linear body measurements of small ruminants.

## CONCLUSION

It can be concluded from the results of the study that feeding both sweet potato and cassava peels at 10% each improves body morphometric traits without adverse effect on fattening rams.

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