

## RUN -05

### Cost Benefit of Feeding Uda Rams with Camel's Foot Pod Meal (CFPM) As a Replacement for Soybean Meal

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#### Abstract

The replacement value of Camel's foot pod meal for soya bean meal was determined using sixteen (16) Uda rams with an average weight of 30.00 kg in a complete randomized design. The animals were divided into four groups and housed individually with four animals per group to four treatment diets with Camel's Foot Pod Meal (CFPM), replacing soybean meal at 0%, 20%, 40% and 60% tagged as diet 1, 2, 3, and 4 respectively. The concentrate diets was fed to each animal at 1.5% body weight with rice straw serving as basal diet for the animals for 12 weeks. Record of feed intake and weekly body weight gain were taken throughout the 12 weeks of the feeding trial. Feed to gain ratio was calculated from the ratio of the total feed intake per day to average daily weight gain. Cost analysis was carried out using the current market cost of feed ingredients. All the data collected were subjected to analysis of variance. The daily feed intake (1066.44g) and average weight gain (5.00kg) were higher in diet 4 than the control diet. The highest cost of feed per live weight gain was recorded in diet 1 (₦1577.58) and the least was recorded in diet 4 (₦1134.70). The cost of feed consumed increased ( $p < 0.05$ ) as the inclusion level of CFPM decreased but does not follow a definite pattern with the highest value (₦70.43) obtained in diet 2 and the least cost in diet 4 (₦67.57). The results of feeding graded levels of CFPM to Uda rams showed a comparable performance in terms of feed intake, live weight changes and cost benefit between those on the control diet. The optimum weight gain and efficient utilization of the diets was achieved in diet 4 at 60% replacement level of CFPM.

**Key words:** Uda rams, Camel's foot pod, soybean meal, rice straw

#### Introduction

The deteriorating grazing conditions and increased rising cost of concentrate ingredients such as soya bean meal, groundnut cake, wheat offal etc affect small ruminant production in Nigeria (Dayo *et al.*, 2009). This has led to the search for alternative feed resources over the past decades especially the use of tropical browse plants as source of nutrients for ruminant animals (Okoli *et al.*, 2007). The fodder value of browse plants (leaves, twigs and fruits) is often superior to herbaceous plants particularly in the case of grass species (Fadiyimu *et al.*, 2011). Tropical forage legumes offer a considerable potential to alleviate and compliment the low feeding value of natural pastures and crop residues.

However, some agro forestry species that were previously neglected are nowadays being valued in Nigeria (Aleto and Omodara, 1994). These species are spared by farmers depending on the needs and among them is *Piliostigma reticulatum* which is commonly known as Camel's foot. One way of solving the problem of inadequate feed supply to ruminants is to utilize alternative feed resources particularly those that are not useful to Man. Camel's foot is plentiful in the savanna region of Nigeria where several tones of the pods are wasted annually (Akin-Osanaiye *et al.*, 2009).

It is on this basis that the present study was embarked upon to evaluate the replacement value of Camel's foot pod meal with Soya bean meal in the diet of Uda rams.

#### Materials and Methods

This study was conducted at the Livestock Teaching and Research Farm (LTRF) of Kebbi State University of Science and Technology, Alero. Sixteen (16) male Uda rams with an average weight of 30kg were housed in an individually pens measuring 2m x 1m. The animals were group fed for a period of two weeks before commencing treatment. The rams were dewormed and administered antibiotics (oxytetracycline) as a prophylactic measure.

Harvested Camel's foot pods were sun dried and milled; four experimental concentrate diets were compounded with Camel's foot pods meal replacing soya bean meal at 0, 20, 40 and 60% levels of inclusion as treatment 1, 2, 3 and 4 respectively (Table 1). Rice straws were served as basal diet. Completely Randomized Design (CRD) as outlined by Gomez and Gomez (1984) was used in this experiment with four animals allocated as group to four experimental diets in the feeding trial. Each group of four animals were assigned to one of the experimental diets and fed at 1.5% of their body weight for 12 weeks. The animals were weighed weekly between 8.00am and 9.00am for the period of the experiment and therefore concentrate feeding was adjusted on weekly body weight basis. The basal diet and water were offered *ad libitum* to each animal for 12 weeks.

Table 1: Ingredient composition for the experimental concentrate diets

| Parameters (%)    | Treatments |         |         |         |
|-------------------|------------|---------|---------|---------|
|                   | 1 (0%)     | 2 (20%) | 3 (40%) | 4 (60%) |
| Maize             | 10         | 10      | 10      | 10      |
| Wheat offal       | 30         | 30      | 30      | 30      |
| Soya bean meal    | 15         | 12      | 9       | 6       |
| Cowpea husk       | 30         | 30      | 30      | 30      |
| Rice bran         | 14         | 14      | 14      | 14      |
| Camel's foot pods | 0          | 3       | 6       | 9       |
| Salt              | 1          | 1       | 1       | 1       |
| Total             | 100        | 100     | 100     | 100     |
| Calculated        |            |         |         |         |
| CP (%)            | 17.00      | 16.80   | 16.40   | 15.90   |
| ME (Kcal/kg)      | 2091       | 2066    | 2042    | 2017    |
| CF (%)            | 18.00      | 18.70   | 19.30   | 20.00   |
| Cost (₦)          | 68.31      | 66.66   | 65.01   | 63.36   |

Daily record of feed intake and weekly body weight gain were taken throughout the 12 weeks of the feeding trial. Feed to gain ratio was calculated from the ratio of the total feed intake per day to average daily weight gain. All data were subjected to analysis of variance using Statistical Analysis System SPSS .20 (2007). Treatment means was compared using the Duncan Multiple Range Test (DMRT). Cost analysis was carried out using the current market cost of feed ingredients.

## Results and Discussion

Table 2 presents the growth characteristics and the cost of feed/kg live weight of the rams fed experimental diets containing graded levels of CFPM. The total feed intake was higher in diet 4 (1066.44g) than the control diet (1031.08g). The highest feed intake recorded for animals on diet 4 is consistent with the report of Wada *et al.* (2016) which stated that the voluntary feed intake of any animal is an important nutritive index that determine weight gain in livestock. There were significant ( $p < 0.05$ ) differences in the feed to gain ratio of animals across the treatments. The results revealed the ability of animals on diet 4 to convert the feed consumed to weight gain. The cost of feed per kg decreased as the inclusion level of CFPM increased. The cost of feed per kg was higher (₦68.31) in the control diet than other diets with the least cost in diet 4 (₦63.36). The analysis was based on the substituting market prices of feed ingredients per kg.

Table 2: Growth performance of Uda rams fed diets containing camel's foot pods characteristics

| Parameters                        | Treatments           |                      |                      |                      | SEM    |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|--------|
|                                   | 1(0%)                | 2 (20%)              | 3 (40%)              | 4 (60%)              |        |
| Daily feed intake (g/day)         | 1031.08              | 1095.70              | 1055.82              | 1066.44              | 23.93  |
| Av. Wt. Gain (kg)                 | 3.75                 | 3.62                 | 4.57                 | 5.00                 | 0.81   |
| Feed/gain ratio                   | 23.10 <sup>ab</sup>  | 25.42 <sup>a</sup>   | 19.41 <sup>b</sup>   | 17.92 <sup>c</sup>   | 1.34   |
| Cost of feed/kg (₦)               | 68.3                 | 66.66                | 65.01                | 63.36                |        |
| Cost of feed consumed (₦)         | 70.43                | 73.04                | 68.64                | 67.57                | 9.266  |
| Cost of feed/live wt. Gain (₦/kg) | 1577.58 <sup>a</sup> | 1693.75 <sup>a</sup> | 1260.65 <sup>b</sup> | 1134.70 <sup>b</sup> | 66.226 |
| % savings                         | -                    | -7.36                | 20.89                | 28.08                |        |

<sup>abc</sup>: means on the same row followed by the same superscripts were not significantly ( $p < 0.05$ ) different

The cost of feed consumed increased ( $p < 0.05$ ) as the inclusion level of CFPM decreased but does not follow a definite pattern with the highest value (₦70.43) obtained in diet 2 and the least cost in diet 4 (₦67.57). This result supported the report of Suleiman *et al.* (2014) who observed that the cost/kg decreased as the inclusion levels of *Daniellia oliveri* leaf meal increased in the diets of Savanna brown goats. Similar trend was observed ( $p < 0.05$ ) in the cost of feed per live weight gain with diet 2 having the highest value (₦1693.75/kg) and the least was obtained in diet 4 (₦1134.70/kg). This might be due to the lower cost and comparatively higher body weight gain of rams fed diet containing CFPM. It can be deduced that animals fed diets 2, 3 and 4 conveniently meet their nutrients requirement from the inclusion of CFPM with other available feed resources used in this study at a lower prices. Diet 4 in particular falls within the least and manageable cost that can be practiced by farmers who engage in intensive farming such as fattening programmes. This observation was in line with the work of Addass *et al.* (2012). The savings of feed cost was better in rams fed the highest inclusion level (60%) of CFPM. There was no savings in the control treatment. The savings increased as the level of CFPM in the diet increases. Earlier studies reported a similar trend when rabbits were fed groundnut haulms (Iyegbe-Erakpotobor, 2006). This indicates that it is most profitable to use CFPM in formulating diets for rams.

## Conclusion

Inclusion of CFPM particularly at 60% in a total mixed ration did not compromise the performance of the experimental animals. The feed cost savings increased as the level of CFPM inclusion increases. Therefore *Piliostigma reticulatum* pods can serve as a potential feed resource for ruminant fattening programme.

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