

# PERFORMANCE OF SOKOTO RED BUCKS FED *Piliostigma reticulatum* AND *Faidherbia albida* PODS AS SUPPLEMENTS

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## ABSTRACT

The feeding trial involving 12 Sokoto Red Bucks with an average body weight of 13.75 kg lasted for 12 weeks to investigate growth performance of Sokoto Red bucks fed *Piliostigma reticulatum* and *Faidherbia albida* as supplements. The animals were randomly assigned to three treatments represented as A, B and C in a complete randomized design (CRD). Treatments B and C contains 7.5 % *P. reticulatum* and *F. albida*, respectively. The animals were fed the experimental diet at the rate of 3% of their body weight and water offered *ad libitum*. There was no significant differences ( $P>0.05$ ) in total dry matter intake and average daily weight gain of the Red Sokoto bucks. The inclusion of *Piliostigma reticulatum* and *Faidherbia albida* at 7.5% level in treatments B and C respectively as feed supplement in Sokoto red goats did affect their performance negatively and was without any significant difference ( $P<0.05$ ) in all the treatments. Therefore, the test ingredients can be fed to goats as supplements in order to alleviate feed challenges especially during the dry season.

**Keywords:** *Faidherbia albida*, *Piliostigma reticulatum*, supplement, performance, bucks

## Introduction

Goat production contributes immensely to animal protein supply in Nigeria, and constitutes a very important part of the rural economy with majority of the rural households keeping goats (Aruwayo, 2018). They are good producers of meat for human consumption and are kept by peoples of various cultures, religions and races due to their short gestation interval and absence of religious bias against their meat (Ozunget *et al.*, 2011).

The scarcity of feeds, especially during the dry periods of the year, deteriorating grazing conditions and increased rising cost of concentrate ingredients like groundnut cake, soya bean meal, cottonseed cake etc. affect small ruminant production in Nigeria (Adegbola, 2004;) and has led to the use of tropical browse plants, which fodder value is often superior to herbaceous plants and not relished by human, as source of nutrients for ruminant animals (Okoli *et al.*, 2007; Fadiyimu *et al.*, 2011). *Piliostigma reticulatum* and *Faidherbia albida* leaves and pods nutritive values in feeding ruminants have been separately investigated (Muftau *et al.*, 2019). The present study aimed at evaluating the performance of Red Sokoto bucks fed *Piliostigma reticulatum* and *Faidherbia albida* feed supplements.

## Materials and Methods

### Experimental site

The experiment was conducted at Professor. Lawal Abdu Saulawa Livestock Teaching and Research Farm, Federal University, Dutsin-Ma, Katsina State. The State is located between latitudes 12.985531°N, and longitudes 7.617144°E. It covers an estimated land area of about 24,192 square kilometers (9,341 square miles) (Gaddafi *et al.*; 2019).

### Animals, Experimental Design and Management

Twelve Sokoto Red bucks with an average body weight of 13.75 kg were purchased from a local market in Dutsin-Ma and quarantined for two weeks. They were treated with Levamisole and Ivermectin against internal and external parasites. Oxytetracycline L.A 20% was also administered intramuscularly at 1ml per 10kg body weight before the commencement of the experiment. The animals were randomly allocated into three dietary treatment groups in a completely randomized design (CRD) and were each housed in an individual pen. The animals were weighed prior to commencement of the experiment and at two weeks intervals thereafter throughout the experimental period. The animals were fed experimental diets (Table

1) at 3% of their body weights and were provided with clean water every day *ad libitum*. Daily feed intake of the animals was determined by weighing the feed given and the leftover the following morning throughout the period of the feeding trial. Feed efficiency was calculated by dividing weight gained by feed consumed.

**Table 1: Ingredients composition of experimental diets.**

| Ingredients                    | Diets      |            |            |
|--------------------------------|------------|------------|------------|
|                                | A          | B          | C          |
| Maize offal                    | 45.00      | 37.50      | 37.50      |
| Cottonseed cake                | 13.00      | 13.00      | 13.00      |
| <i>Piliostigma reticulatum</i> | 0.00       | 7.50       | 0.00       |
| <i>Faidherbia albida</i>       | 0.00       | 0.00       | 7.50       |
| Rice offal                     | 25         | 25         | 25         |
| Poultry litter                 | 15         | 15         | 15         |
| Bone meal                      | 1          | 1          | 1          |
| Salt                           | 1          | 1          | 1          |
| Total                          | <b>100</b> | <b>100</b> | <b>100</b> |

### Chemical and statistical analyses

The proximate analysis of the feed samples was done according to AOAC (1990). Data collected were subjected to analysis of variance using the General Linear Model procedure of SAS (SAS 2001). The treatments means were separated using Duncan Multiple Range Test.

### Results and Discussion

#### Chemical composition of the experimental diets

The chemical composition of the experimental diets is shown in Table 2. The values of crude protein obtained in the present study for the diets were lower than the range of 16 – 18% recommended by Norton (1998) for growing sheep and goats. However, the range of crude protein obtained in the present study diets ranged from 10.20% – 10.56 % in the treatment C in this study which has (10.56%) recommended by NRC (1998) for ruminants in tropics. Gatenby (2002) recommended 10 – 12% crude protein as the moderate level of crude protein for ruminant's production. Therefore, the crude protein of the diets might be adequate for the growing Sokoto red goat's bucks. The crude fibre values obtained in this study were higher than values (16.88 – 17.77%) reported by Abdurrahman (2017). The nitrogen free extract values obtained in this study were lower than those 49.68 – 50.35% obtained by Abdurrahman (2017). Ash values obtained in this study were similar to 13.05 – 15.23% ash reported by Abdurrahman (2017). The differences might have occurred possibly as a result of different experimental location and stage of maturity of the test material.

**Table 2: Chemical composition (%) of the experimental diets.**

| Parameter | Treatments |   |   |
|-----------|------------|---|---|
|           | A          | B | C |
|           |            |   |   |

|                      |       |       |       |
|----------------------|-------|-------|-------|
| <b>Dry matter</b>    | 92.47 | 93.39 | 92.57 |
| <b>Crude protein</b> | 10.56 | 10.50 | 10.20 |
| <b>Ether extract</b> | 15.53 | 15.56 | 15.82 |
| <b>Crude fibre</b>   | 18.05 | 17.65 | 18.44 |
| <b>NFE</b>           | 42.88 | 43.77 | 43.10 |
| <b>Ash</b>           | 12.98 | 12.52 | 12.44 |

Table 3: Growth performance by Sokoto Red bucks fed *Piliostigma reticulatum* and *Faidherbia albida* as feed supplement.

| <b>Parameters</b>                 | <b>Treatments</b> |          |          | <b>SEM</b> |
|-----------------------------------|-------------------|----------|----------|------------|
|                                   | <b>A</b>          | <b>B</b> | <b>C</b> |            |
| Feed intake (g/day)               | 487               | 476.27   | 478.75   |            |
| Dry matter intake (g/day)         | 450.17            | 444.78   | 450.17   |            |
| Initial body weight (kg)          | 13.80             | 13.26    | 13.76    |            |
| Final body weight (kg)            | 18.48             | 18.01    | 18.38    |            |
| Total body weight gain (kg)       | 4.68              | 4.63     | 4.63     |            |
| Average daily weight gain (g/day) | 58.33             | 55.06    | 55.06    |            |

Means within rows with different superscripts (a-d) are significantly different ( $P < 0.05$ )

Table 3 shows the growth performance of Sokoto Red bucks fed *Piliostigma reticulatum* and *Faidherbia albida* as feed supplement. There were no significant differences ( $P > 0.05$ ) in dry matter intake, average daily weight gain and total body weight gain among the treatments. This disagrees with the report of Abou El Nasr *et al.* (1996) that *F. albida* pods improve total DMI and overall goat performance when fed as supplement in a complete diet, which was attributed to the palatability (Sanon *et al.*, 2008) of *F. albida* pods to goat. The results are also contrary to that of Abdurrahman *et al.* (2018) who reported enhanced live weight gain and digestibility of organic matter and crude protein when *Piliostigma reticulatum* pod was included at 7.5 % in the diets of Red Sokoto bucks.

**Conclusion:** The inclusion of *Piliostigma reticulatum* and *Faidherbia albida* at 7.5% level in treatments B and C respectively as feed supplement in Sokoto red goats did not affect their performance negatively and was without any significant difference ( $P < 0.05$ ) with the control. Therefore, the test ingredients can be fed to goats as supplements in order to alleviate feed challenges especially during the dry season.

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