# PROXIMATE COMPOSITION OF *BRACHIARIA RUZIZIENSIS-MUCUNA PRURIENS* MIXTURES AND RELATIVE FEED INTAKE OF GROWER RABBITS FED MIXTURE HAY WITH CONCENTRATE

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## Abstract
*Brachiaria ruziziensis* and *mucuna pruriens* were used as the basal diet for grower rabbits, the forages were finely chopped and fed to rabbits. *Brachiaria ruziziensis* which served as the source of energy to the rabbits was fed at different proportions (100, 75, 50 and 25%) and *Mucuna puriens*, the main protein source in the experimental diet was fed at (0, 25, 50, 25 and 75%) across the four treatments. The feed was given in the morning and at evening and the feed intake was measured by subtracting feed given from left over. Proximate composition of the sole hay and mixtures showed 75:25 *B. ruziziensis* and *M. Pruriens* mixture had crude protein (24.98%) with *B. ruziziensis* having the least crude protein value (10.89%). The consumption of forage at different proportions in the four treatments shows that there is acceptance of *Brachiaria ruziziensis* and *Mucuna pruriens* at a high rate by rabbits. Experimental diet with 50:50 mixture of *B. ruziziensis* and *M. Pruriens* had the highest (74.28g) feed intake ($p<0.01$) when compared to other treatment diets. It is therefore recommended that *B. ruziziensis* and *M. pruriens* be mixed at 50:50 for optimum performance in rabbits.

**Keywords:** *Brachiaria ruziziensis, Mucuna pruriens, Mixture, Rabbits, Forages*

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## Introduction
The uses of forages in rabbit feeding is normal practice and rabbit producers are advised to feed forages as a supplement to a basic concentrate diet in order to meet the fiber and some of the vitamin requirement, cost of grains and their by-products have increased dramatically and are often scarce (Nakande *et al*., 2015). Though optimum rabbit production has not been sustained on forages alone using most tropical forages, it is possible to reduce the cost of concentrates in the rations by utilizing forages that are nutrition's and palatable, to achieve a compromise between level of production and cost that is acceptable to producers.

(Aduku *et al*., 1989) conducted some studies on preference of rabbits for different forges, but the vast range of forage species in the tropics has not been properly harnessed for the purpose. Since legumes are high in protein, they have potential to reduce the quality and cost of concentrates for rabbits. However, for rabbits to perform well on forages diets, they need to consume the forages in significant amounts (Amaefule, 2004). This study was undertaken to evaluate the voluntary intake and performance of rabbit fed grass-legume levels of grass-legume mixtures.

## Materials and methods
### Experimental Site
The research was conducted at the Research and Teaching farm of the Department of Crop production, Faculty of Agriculture, Abubakar Tafawa Balewa University, Bauchi, Yelwa Campus. *Brachiaria ruziziensis* and *Mucuna pruriens* forages were harvested at week 8 from the pasture plot of the experimental site.

### Experimental design and Animal management
Twelve (12) rabbits of similar age, breeds and sexes were purchased from Muda Lawal market, Bauchi, Bauchi state. The rabbits were randomly allotted into four (4) dietary treatment groups with three (3) replicates per treatment in a Completely Randomized Design (CRD). The rabbits were individually housed in cages measuring 40 x 40 x 60 $cm^3$. All the rabbits were given prophylactic

against internal and external parasites (Ivomec® ivermectin at 0.2ml/rabbit) and broad-spectrum antibiotic. The rabbits were provided feed and fresh, clean water *ad libitum* throughout the experimental period which lasted for eight (8) weeks, while feed intake was measured for 7 weeks. Forages offered to the rabbits were chopped into smaller sizes then mixed thoroughly with other ingredients. The experimental diets fed to rabbits were balanced across treatments to meet the minimum crude protein requirement (15%CP) for grower rabbits (Aduku, 1993).

Table 1, shows the percentage of legume and grasses and various composition of feed ingredients. The rabbits were given 100 grams of the experimental diet which was finely chopped to enhance palatability. In treatment 1 (T1) the rabbits were given 100% of *B. ruziziensis*, while in treatment 2 (T2) they were given *B. ruziziensis* 75% and 25% *Mucuna pruriens* also in Treatment 3 (T3) were given 50% proportion of Brachiaria and Mucuna mixture (50.50). In treatment 4, rabbits were fed 100% *Mucuna pruriens* in the experimental diet was chopped and mix with other fixed ingredients

Table 1. Levels of *Brachiaria ruziziensis* and *Mucuna pruriens* in the diet mixtures of Grower rabbits

| **Ingredients** | **T1** | **T2** | **T3** | **T4** |
|---|---|---|---|---|
| *B. ruziziensis* | 100 | 75 | 50 | 0 |
| *M. pruriens* | 0 | 25 | 50 | 100 |
| Bone | 2.5 | 2.5 | 2.5 | 2.5 |
| Salt | 0.30 | 0.30 | 0.30 | 0.30 |
| Lysine | 0.10 | 0.10 | 0.10 | 0.10 |
| Methionine | 0.15 | 0.15 | 0.15 | 0.15 |
| Vitamin premix | 0.25 | 0.25 | 0.25 | 0.25 |
| **Total** | 100 | 100 | 100 | 100 |

**T1** = Treatment 1**, T2** = Treatment 2**, T3** = Treatment 3**, T4** = Treatment 4

Feed intake was in the morning and left over were weighted every day. Feed intakes were evaluated by subtracting the left over from the amount of feed offered. The feed convention ratio of daily feed conversion ratio was calculated as the ration of daily feed intake to unit weight gain by grower rabbit. Data for voluntary intake was collected for seven days using the weight scale balance. The feed intake was collected by subtracting the left over from feed offered to get the daily feed intake.

**Result and discussion**

The various proximate composition of grass and legume as shown in Table 2, indicates that dry matter in *Brachiaria ruziziensis* is 88.93% while the dry matter for *M. puriens* is 92.9%. The crude protein level indicated for the grass *(B. ruziziensis*) is 10.89% and for the *Mucuna pruriens* 24.98%. The table also shows that, the crude fiber for *B. ruziziensis* is 31.63% and for *Mucuna pruriens* as 10.73%. The nitrogen free extract (NFE) for *B.ruziziensis* is 38.56% and *Mucuna puriens* as 50.77%. The ash composition for *B. ruziziensis* is 9.46% while for *M. puriens* is 3.13%.

Table 2: Proximate composition of *Brachiaria ruziziensis* and *Mucuna pruriens* hay

| **Parameters (%)** | ***B. ruziziensis*** | ***M. pruriens*** | **75:25** | **50:50** | **25:75** |
|---|---|---|---|---|---|
| Dry matter | 88.93 | 92.9 | 90.1 | 91.3 | 92.8 |
| Crude protein | 10.89 | 24.98 | 22.1 | 18.2 | 12.5 |
| Crude fiber | 31.63 | 10.73 | 28.2 | 29.5 | 30.5 |
| Ash | 9.46 | 3.13 | 12.3 | 9.8 | 10.7 |
| Nitrogen Free Etract | 38.56 | 50.77 | 38.3 | 45.2 | 49.1 |

Table 3**,** shows the feed intake of *B. ruziziensis* and *M. pruriens* by the rabbits for seven weeks (49 days). In treatment one, the quantity consumed by the rabbit has an average intake of 57.86g when fed *Brachiaria ruziziensis* at 100g. Rabbits in Treatment 2 fed with *Brachiaria ruziziensis* at 75% and *Mucuna puriens* 25% had average intake of 61.42 grams and when fed *Brachiaria ruzuziensis* and

*Mucuna puriens* at 50:50, rabbits in Treatment three (3) consumed 74.2g which had the highest value compared to other treatment diets. In Treatment 4, rabbits fed 25% of *Brachiaria ruziziensis* and 75% *Mucuna puriens* had a relative intake of 55g.

The result obtained in T1 (57.86g) was significantly different from the intake in T2 and T3 but was statisitically at par (P>0.01) with value obtained in treatment (T4). The value for intake was highest in Treatment 3 (74.28g) and lowest in treatment 4 (55g) and was similar to the result obtained by (Iyeghe-Erakpotobo, 2008), in a similar study, but was lower than 120g reported by Aduku (1993) for daily intake of grower rabbits.

Table 3. Feed intake of *Brachiaria ruziziensis* and *Mucuna puriens* by rabbit when offered 100 grams in one allocation for seven (7) weeks

| | Relative intake (g) in Weeks | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Feed offered (%)** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **Mean** |
| *Brachiaria ruziziensis* 100:0 (T1) | 30 | 40 | 60 | 80 | 55 | 65 | 75 | 57.86[c] |
| Brachiaria + Mucuna 75:25 (T2) | 50 | 30 | 40 | 80 | 75 | 80 | 75 | 61.42[b] |
| Brachiaria + Mucuna 50:50 (T3) | 80 | 50 | 75 | 90 | 80 | 75 | 70 | 74.28[a] |
| *Mucuna pruriens* 0:100 (T4) | 70 | 60 | 80 | 30 | 40 | 55 | 70 | 55.00[c] |

[a,b,c]= Means with different superscript are significantly different **, T1 =** Treatment 1**, T2 =** Treatment 2**, T3 =** Treatment 3**, T4 =** Treatment 4

**Conclusion and Recommendation**

This study shows that experimental rabbits have preference for the grass-legume mixture in Treatment 3 when the forage mixture was at equal proportion of *Brachiaria ruziziensis* and *Mucuna pruriens* (50:50). The rabbits had the highest feed intake in Treatment 3, compared to other treatment diets. It is therefore recommended that *Brachiaria ruziziensis* and *mucuna pruriens* should be mixed in the diets of grower rabbit at 50:50 ratio for best feed quality and intake in Rabbits.

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