SIGNAL GRASS (*Brachiaria decumbens*) YIELD AT DIFFERENT STAGES OF GROWTH

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ABSTRACT
The research work was conducted to evaluate the yield of Signal grass (*Brachiaria decumbens*)**.** Plant height, number of tillers, herbage and dry matter yields were determined. Seeds were broadcasted on a prepared seed bed, grown for two weeks post-emergence and then transplanted on the field. The grass was harvested at three stages (30, 60 and 90 days post emergence) using quadrats. The plants height at 90 days showed that there was significant (P<0.05) difference between all the treatments. The Plants height ranged from 22.89 cm height at 30 days to 122.40 cm at 90 days growth. The number of tillers per plant varied between the treatments (P<0.05) and ranged from five tillers per plant at 30 days to 68.20 tillers/plant at 90 days. The fresh fodder yield also varied between all treatments (P<0.05) and ranged between 18.1 tons/hectare at 30 days to 33 tones/hectare at 90 days. The dry matter yield varied between treatments (P<0.05) which ranged between 2.35 tons per hectare at 30 days to 8.30 tons per hectare at 90 days Post-emergence. Therefore, the yield of Signal grass (*Brachiaria decumbens*) increase with age up to three months.

Key words: Signal grass, Growth, Yield.

INTRODUCTION
Brachiaria decumbens is a low-growing decumbent perennial grass with flowering stems up to 100 cm high originating from the prostrate, multi-noded stems; plants can spread by both rhizomes and stolons as well as through seed production. *Brachiaria decumbens* has been widely adopted as a pasture for grazing ruminants due to its high nutritive value and aggressive growth habit that provides a dense ground cover able to suppress weeds. Paterson *et al.* (1983) reported that the aggressive growth habit can result in pastures becoming monocultures by suppressing companion plants such as legumes, thus reducing the potential nutritive value of the pastures for livestock. Legumes with stoloniferous growth habits, such as *Arachis pintoi* (pinto peanut) and *Desmodium heterophyllum* (creeping hetero) and plants with shrubby/tree growth habits (such as *Leucaena leucocephala* and *Stylosanthes guianensis*) have been used with some success as legume companion species *B. decumbens* pastures. The ability of *B. decumbens* to withstand shading has made it an important companion to Leucaena (Schultze-Kraft and Tietzel,1992), and it has been successfully grown as a pasture in coconut plantations (Galgal *et al.*, 2000). *Brachiaria decumbens* is essentially a grass of the wet tropics, but it has good drought tolerance and is adapted to a dry season of four or five months.

MATERIALS AND METHODS

The research work was conducted at the Teaching and Research Pasture land of the Federal Polytechnic , Bauchi .Intended Land for the nursery was prepared on 2nd June,2015 by clearing the land and stones were removed from the land area. Rocks were dug out, weeds were cleared and removed as suggested by FIS (2015). The soil was broken until it was loose and crumbly to allow proper water penetration. After tillage, the soil surface was raked smoothened and then sub divided into four seed beds of 5cm thick as suggested by Tadess *et al.*(2013). The seed beds were watered on daily basis for four days before planting.

Planting was carried out on 6th June, 2015 by sowing the seeds manually using broadcasting method (Tadess *et al.*, 2013). The seeds were raked over lightly and covered with very thin layer of soil and dry grasses to avoid blowing off the seeds away. The grasses were removed when the seeds started to emerge on the fifth day (11th June,2015). A well-drained cleared land of one and half hectare size was used for the new seedling growth. Tractor was used to harrow the field three days to the transplanting exercise (22nd June,2015). Transplanting was done on the 25th June,2015, which was two weeks post emergence. The grasses were removed by gently digging under it with hand trowel until the pampas grass loosens and then pried out of the ground with hand and then was taken to the field for transplanting. On the field, grid and base lines were drawn for accuracy of spacing . Holes were made along the lines and seedlings were inserted per hole which ensured good contact was established with the soil around the plant .The seedlings were transplanted using hoe at 20 by 20 cm intra and inter raw spacing (Tadess, 2013). The grass was harvested at three stages (30,60 and 90 days) on the 11th July, 2015 , 10th August, 2015 and 9th September,2015 respectively using twenty (20) quadrats of one meter by cutting the plant 2cm above the ground as for the ruler using sickle . The harvested grass was dried under shed on concrete floor. for five days and dry matter yield was determined as suggested by Obe and Yusf (2011). Plant height was measured using linene measuring tape and number of tillers counted manually. The grown herbage was subjected to quadrant yield determination before drying as hay for the feeding trial. The average height was measured and dry matter yield was calculated per hectare.

$$\text{Dry Matter yield} = \frac{\text{SSF-SSD}}{\text{SSF}} \times \text{PFW} \times 10000$$

SSF= average sub sample fresh weight
SSD= average sub sample dry weight
PFW=Plot fresh weight

The data generated from feeding trial was subjected to statistical Analysis of Variance using General Linear Model in Statistical Analysis System (SAS, 1998). Where significant differences existed means was separated using Least Significance Difference (LSD) as outlined by Steel and Torrie (1980).

RESULTS AND DISCUSSION

The monthly yield of *Brachiaria decumbens* showed variations in all parameters. This might be due to increase in size and number of tillers as plant grows (Ibrahim, 2014). The plant height at 90 days showed that there was significant ($P<0.05$) difference between the treatments. The Plant height ranged from 22.89 cm height at 30 days to 122.40 cm at 90 days growth period. The number of tiller per plant varied between the treatments ($P<0.05$) and ranged from five tillers per plant at 30 days to 68.20 tillers/plant at 90 days which is similar to the result obtained by Adeoye (2010) as 67 tillers/plant at 12 weeks post-emergence of *Brachiaria decumbens*. It also agrees with the findings of Santos (2011) that there is positive relationship

between the height and the number of tillers in *Brachiaria decumbens* when the author estimated yield of *Brachiaria* according to height of the plants and found out the pastures having grasses of 10, 20, 30 and 40 cm in height had 292, 408, 496 and 344 aerial tillers/m^2 respectively. The fresh fodder yield also ranged between 18.1 tons/hectare at 30 days to 33 tons/hectare at 90 days. The dry matter yield varied between treatments ($P<0.05$) which ranged between 2.35 tons per hectare at 30 days to 8.30 tons per hectare at 90 days Post-emergence. This is in line with the finding of Mathias *et al*. (1973) that there is significant correlation of forage yield with week advancement which attributed to age of plant establishment.

CONCLUSION

In conclusion , when growing Signal grass (*Brachiaria decumbent*) as a pasture specie the plant height, number of tillers per plant, fresh fodder yield and dry matter yield increased with age of the plant up to ninety days . It is recommended that more research work be conducted on yield of Signal grass at growing stages above ninety days.

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Table 1: Signal grass (*Brachiaria decumbens*) yield at 1 to 3 months Post-emergence

Parameters	Period			LSD
	I month	**2 month**	**3 month**	
Plant height (cm)	22.89[a]	60.52[b]	122.40[c]	3.379
No of tiller /plant	5.00[a]	19.01[b]	68.20[c]	2.774
Fresh fodder yield (t/ha)	18.10[a]	27.80[b]	33.00[c]	2.112
Dry matter yield (t/ha)	2.35[a]	5.65[b]	8.30[c]	0.526

Means in the same row with different superscript are significantly different (P<0.05), LSD= Least significant difference, t = tone, ha = hectare