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## Preliminary investigations on Columbus grass (*Sorghum alnum Parodi*) for fodder in semi-arid Nigeria : effects of nitrogen fertilizer on growth components and herbage yield

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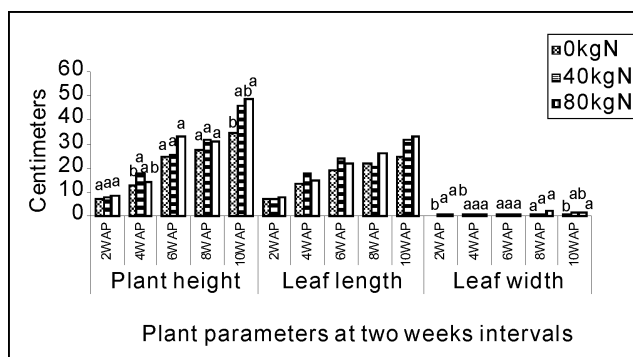
**Key words :** Columbus grass, semi-arid environment, sowing methods

**Introduction** In Nigeria, Columbus grass is a recently introduced forage crop grown mostly in research settings. Most of the ruminant population in Nigeria is located in the semi arid zones, characterized by a long dry season of 6-7 months, during which there is a serious lack of forage both in quantity and quality. This research was therefore conducted to investigate the effect of different levels of nitrogen fertilizer on the growth characteristics and herbage yield of Columbus grass in semi-arid Nigeria as fodder during this period.

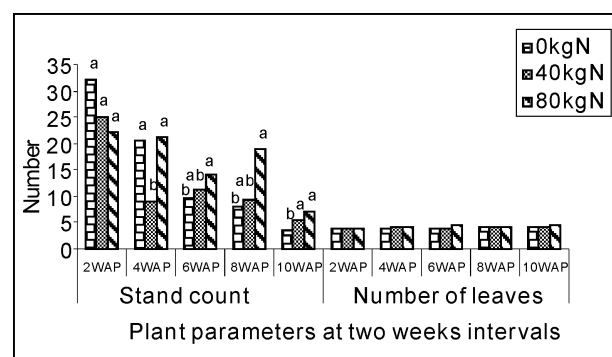
**Materials and methods** The experiment was conducted in the rainy season of 2005/2006 at the Usmanu Danfodiyo University Teaching and Research Farm (13°1'N, 5°15'E) using a Randomized Complete Block Design (RCBD) with three replications. Land was prepared manually using a hoe. The plots were marked out into parallel rows, separated by 0.5m footpath. The plots were rectangular, slightly sunken basins of 3m<sup>2</sup> × 4m<sup>2</sup> (12m<sup>2</sup>). Seeds of Columbus grass (*Sorghum alnum Parodi*) were manually broadcasted on the plots at the rate of 19.8kg ha<sup>-1</sup>. Nitrogen fertilizer (NPK 15:15:15) was applied at the rate of 0, 40 and 80 kg ha<sup>-1</sup>. Plant height, leaf length, leaf width, number of leaves and number of plants per plot were measured in each plot at 2, 4, 6, 8 and 10 weeks after planting (WAP). Herbage yield was estimated once at 10 WAP. Data were subjected to analysis of variance, and LSD was used to compare means (SAS 1988).

**Results and discussion** Plant height, leaf length and leaf width of Columbus grass under different nitrogen applications at different time intervals are presented by weeks post planting in Figure 1. Nitrogen application affected (P<0.05) plant height at 10 WAP and leaf width at 2 and 10 WAP respectively. Similarly, stand count was affected (P<0.05) between the treatments. 80 kg ha<sup>-1</sup> produced the highest (P>0.05) mean DM yield of 7100 kg ha<sup>-1</sup>. This was slightly lower than the value of 8180 kg ha<sup>-1</sup> reported by Muhammad (2004) in the same ecological zone.

**Conclusion** It can be concluded from the results of this study that 80 kg ha<sup>-1</sup> produced the best results in the area of study.



**Figure 1** Plant height, Leaf length and Leaf width of Columbus grass with different sowing methods at different time intervals.



**Figure 2** Stand count and number of leaves of Columbus grass with different sowing methods at different time intervals.

### References

- Muhammad, I.R. (2004). Production and utilization of Columbus grass (*Sorghum alnum Parodi*) in the Savannas of Nigeria. PhD Thesis, Department of Animal Science, Ahmadu Bello University, Zaria, Nigeria. 182pp.
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