

The effect of nitrogen fertilisation on the morphological development and growth rate of star grass (*Cynodon nlemfuensis*)

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Introduction Nitrogen is one of the main inputs used in forage production systems to increase productivity. However, in Cuba, the availability of fertiliser N is limited and therefore if applied, needs to be used with high efficiency. Previous studies (Johnson, 2001, Del Pozo, 2003) investigated the effects of N on growth, carbohydrate and protein content but did not consider morphological changes in *Cynodon nlemfuensis*. A study was therefore undertaken investigating how N application influences morphological development of the plant and how these changes might affect the efficiency of use of applied N.

Materials and methods The experiment was carried out at the research facility of the faculty of Veterinary Medicine in Cuba in the year 2001, using a 10-year old pasture of *Cynodon nlemfuensis*. A total of four growth cycles (two in the rainy season and two in the dry season) of each 12 weeks, was studied over one year. Average temperature ranged from 24 to 31 °C, with a maximum of 30.7 °C and a minimum of 19 °C with 1308mm rainfall. The experiment consisted of two treatments (0 or 50 kg N per growth cycle) and a split plot design was used with three replicates. For every growth cycle the herbage was cut back to a height of 5 cm. Subplots were harvested on a weekly basis (week 2-12) and DM yield for the different components was estimated.

Results No N X age interactions were found within season for DM yield but the effect of season was significant ($p > 0.05$). Maximum growth rates were achieved for the N treatments in week 7 of the dry season (0.36 tDM/ha) and week 5 (0.663 tDM/ha) of the rainy season. N response was 34 and 52 kgDM/kg N for the dry and wet season, respectively. Proportion of leaf in the DM was unaffected by either N application or season but tended to decrease for all treatments from 0.6 in week 2 to 0.45 in week 12.

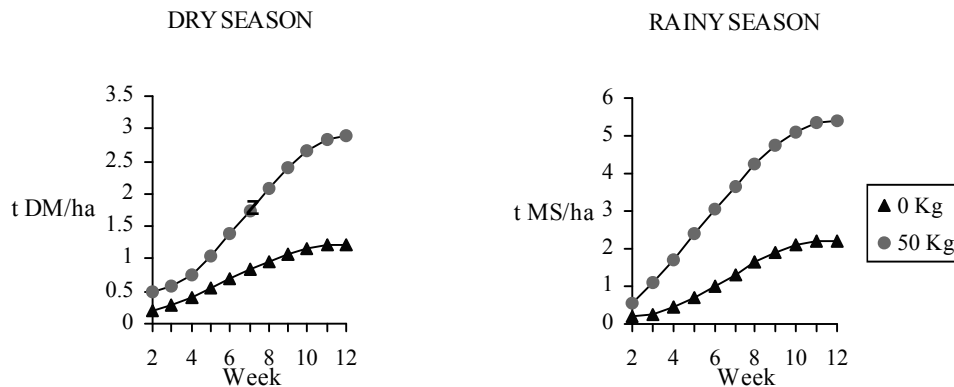


Figure 1 DM yields of *C. nlemfuensis* in the dry and wet seasons

Conclusions The response to N was substantially higher during the wet season compared to the dry season, while leaf proportion in the DM was unaffected by N application. Lower levels of N application should be used in the dry period.

References

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