

Summary

The response of a degraded *Brachiaria decumbens* pasture to the application of different sources of N at the beginning of the 1993 dry season (March) was studied in a dystrophic Red-Yellow Podzol at the Zootechnical Institute in Nova Odessa, São Paulo, Brazil. A randomized block experimental design, arranged in split-plots, was used with four replicates. N sources (main plots) were urea, urea + kieserite ($\text{MgSO}_4 \cdot \text{H}_2\text{O}$), ammonium sulfate and check (without N). Age of cutting (subplots) was 33, 61, 89, 117, 145, and 173 days after N application. At the beginning of the trial, P was applied at 22 kg/ha and K at 50 kg/ha in those plots receiving N.

Results showed a significant response to N application; application in March had a significant effect on the production of *B. decumbens* during the following dry season. Results were better in terms of DM production (more than 5 t/ha) and N recovered (55%) at 89 days when ammonium sulfate was applied, but when urea was applied alone or with kieserite, large losses of N occurred due to volatilization and leaching, as evidenced by the low DM production (3 t/ha) and N recovery (15%) at 89 days.