

# Summary

The main objective of this investigation was to determine the seasonal variation in some biochemical and physiological parameters in the root system of *B. decumbens*, grown on a 10-year pasture. The experiment was conducted

in the Marília Region, State of São Paulo, Brazil, in a Red-Yellow Podzolic soil. Four treatments were set in the field, using a randomized complete block design with four replications. These treatments were: control (T1); fertilization with macro and micronutrients (P, K, Zn, Cu, B), including N (T2); harrowing (T3); and harrowing plus fertilization with macro and micronutrients without N (T4). Nitrogen was applied twice (March and October) a year. Sixteen harvests were performed in 42-day intervals. Nitrogen fractions, soluble carbohydrates and soluble phenols had almost the same seasonal variation throughout the experiment. Harrowing plus fertilization did not change the biochemical and physiological parameters. The results indicate that the lack of response was due to the degraded nature of the pasture.