

## Summary

The changes in the physical-chemical properties of a medium-textured red-yellow Latosol were characterized in a *Brachiaria brizantha* cv. Marandu pasture in Porto Acre (Acre, Brazil), after 2 years of use. The pasture management system consisted of rotational grazing with 2 and 1.5 AU/ha during the rainy and dry seasons, respectively, with variable periods of rest and previous burning spaced at 3- or 5-year intervals. Treatments consisted of different periods of pasture use (1, 4, and 8 years), arranged in randomized complete blocks and six replicates or soil sampling sites. Available aboveground forage and the amount of roots in the soil decreased with pasture age, whereas weed population increased. Also, plant tissue K and Mg concentrations increased with time of pasture use, Ca concentration decreased, and N and P remained constant. Soil K content did not vary, but soil P, Ca, Mg, and DM contents decreased and soil pH and Al content increased with pasture age. Apparent density increased with pasture age and soil depth.