

PHYSICAL AND CHEMICAL SOIL ATTRIBUTES AFTER AUTUMN-WINTER CROPS IN DOURADOS, MATO GROSSO DO SUL, BRAZIL

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Soybean in sequence of autumn-winter crops is predominant in the region of Dourados, MS. This management could change chemical and physical properties of the soil. The aim of this study was to evaluate the chemical and physical properties of the soil during summer soybean cultivation after corn, *Brachiaria* spp. and cowpea in autumn-winter. The experiment was conducted at the experimental field of the Embrapa Western Agriculture in Dourados, MS, in a Dystroferric Red Latosol (Oxisol), at 2014/15 crop season. The experimental design was a randomized block with four treatments (*Brachiaria ruziziensis*, intercropping corn-*B. ruziziensis*, single corn and cowpea) in four replicates. Samples were collected in four layers, 0-0.10m, 0.10-0.20m, 0.20-0.30m and 0.30-0.40m of depth, to analyze macronutrients, micronutrients, density and porosity of the soil. The data were subjected to ANOVA and averages were compared by the Tukey's test at ($p < 0.05$). Soil chemical properties showed larger in the layer of 0-10m, in which pH (5.5 CaCl₂), cation exchange capacity (12.6 cmolc dm⁻³), percent base saturation (71.8 %), organic matter (40.1 g kg⁻¹), phosphorus (54.7 mg dm⁻³), potassium (0.79 cmolc dm⁻³), calcium (5.7 cmolc dm⁻³), magnesium (2.50 cmolc dm⁻³), manganese (108.0 cmolc dm⁻³) and zinc (4.90 cmolc dm⁻³). Physical properties as microporosity (5.50 %), total porosity (12.60 %) and density (71.8 kg dm⁻³) had higher levels in the layer 0 to 0.10 m. The single corn showed higher pH (5.0 CaCl₂) and percent base saturation (51.3 %). While, intercropping corn-*B. ruziziensis* had higher cation exchange capacity (10.5 cmolc dm⁻³), potassium (0.37 cmolc dm⁻³), magnesium (1.40 cmolc dm⁻³), manganese (61.1 mg dm⁻³), phosphorus (12.0 mg dm⁻³), iron (34.2 mg dm⁻³), and better porosity (52.9 %) and lower bulk density (1.2 kg dm⁻³). The cowpea contributed with higher organic matter (44.4 g kg⁻¹), possibly associated with the low C/N ratio. Therefore, the autumn-winter crops were able to change chemical and physical soil attributes.

Keywords: soil compaction; intercropping; crop rotation.

Acknowledgments: Embrapa Western Agriculture, CAPES, UFGD.