Geophysical Research Abstracts
Vol. 14, EGU2012-10382, 2012
EGU General Assembly 2012

Physical and Chemical Characterization of a Rhodic Hapludox after 12 Years of Agricultural use under Different Management Systems

L. F. S. Silva (1), M. A. Marinho (1), S.R. Marques (1), and A. Paz Gonzalez (2)

(1) Faculdade de Engenharia Agricola (FEAGRI), Universidade Estadual de Campinas (UNICAMP), 13085-875 Campinas, SP, Brazil, (2) Facultad de Ciencias, Universidade da Coruna (UDC), 15008 Coruna, Spain.

The agricultural use of land generates modifications on soil physical, chemical and biological attributes, and frequently the intensive use of mechanization contributes to the degradation of soil physical and biological quality. This work evaluates the alterations caused by the agricultural use and management on the quality of a *Rhodic Hapludox* occurring in Campinas, SP, Brazil, after 12 years of continuous cultivation. The effects on soil derived from eight management systems, involving the use of heavy harrow, spring-toothed harrow, disc plough, rotary tiller, direct seed-drilling and alternate use of equipments, were compared having as reference a profile of the same soil occurring under forest. The experiment was installed in eight plots with an area of 600 m^2each. Soil sampling occurred on July, 2003, when undisturbed samples were extracted in five points by plot at three depths: 0-0.20 m, 0.20-0.40 m e 0.40-0.60 m, to determine soil bulk density, total porosity, macroporosity and microporosity. Also composite soil samples were extracted by parcel at three depths: 0-0.10 m, 0.10-0.20 m e 0.20-0.40 m, to determine the chemical attributes by routine methods. The obtained data were submitted to exploratory analysis and to ANOVA statistics. Results indicate that there was a decrease in organic matter and exchangeable calcium contents, and also in percent base saturation (V) in cultivated soils when compared with the soil under forest. Exchangeable magnesium content, however, increased under cultivation. For all management systems, total porosity and macroporosity were lower and soil bulk density higher than the values observed in the soil under forest. Most of the evaluated management systems showed significant differences at the 0-0.20 m depth and some of them at 0.20-0.40 m depth; below 0.40 m, the tillage systems don't differ statistically in relation to the evaluated attributes. In comparative terms, the quality of the soil under cultivation decreased in relation to its quality under forest.