Soil quality in anthropized ecosystem located in two biomes in Campinas city / SP-Brazil

Regina Márcia Longo (1), Marina Corcovia (1), Raissa Caroline Gomes (1), Sueli C. Bettine (1), Antonio Carlos Demamboro (1), Felipe H Fengler (2), and Admilson Irio Ribeiro (2)

(1) Pontifícia Universidade Catolica, Campinas/SP, Brazil (rmlongo@uol.com.br), (2) Universidade Estadual Paulista, Sorocaba, Brazil (admilson@sorocaba.unesb.edu)

The rapid growth of large urban centers and the expansion of agricultural activities promote direct pressures on natural ecosystems. These actions have led to constant discussions by researchers and society as a whole in relation to preservation and quality of terrestrial ecosystems, and soil and vegetation components of vital importance to maintain these. In this context, the present study was to evaluate the anthropogenic interferences on soil properties in areas in two forest fragments located in the remaining urban areas in different biomes of Campinas-SP , Brazil. Both have their edges significantly disturbed by the proximity to urban centers , highways, sugarcane cultivation, among others. The remnant of the Atlantic Forest has an area of 250.36 ha is found in a so called protected area of ecological interest (A.R.I.E). This site access is restricted and has conservation measures, but is near major highways. The remnant of savanna has an approximate area of 40 ha there and has no conservation measure, finding it quite degraded. The physical properties and chemical soil in the two situations were collected throughout the border area totaling 28 points in the remaining savanna and 40 in the Atlantic Forest. The results were analyzed using Principal Component Analysis (PCA) to determine the main soil properties that reflect the quality of the ecosystems studied. It can be seen that most of the physical-chemical soil parameters were impacted in some way related to each other and in two ecosystems that is, the size of the vectors and the distance between them are studied in corresponding situations. The bulk density parameter has different behavior between the two biomes, since the particle density is presented close to each other but have different vector sizes. Some of the parameters have been identified with strong relationship between biomes: the Exchange Capacity Cationic (ECC) and the amounts of copper (Cu) by its close proximity of the vectors and the aluminum content (Al) and iron (Fe) for having sizes similar vectors and an appropriate distance between them. The group attributes: pH, calcium (Ca), sum of bases (SB), magnesium (Mg) and base saturation (V%) were found grouped in the two biomes but in different quadrants, reaffirming the great relationship between these parameters. Regarding the organic matter content of these they were similar in the two biomes. The higher nickel content (Ni), chromium (Cr) and lead (Pb) were found in the remaining forest, probably due to the proximity to large vehicle traffic roads. In this context, it can be concluded that the areas under study are impacted negatively in their edge areas, and components such as proximity to agricultural areas and urban sprawl, as well as proximity to major roads may be interfering with the direct mode environmental quality of forest remaining soil from two different biomes located in urban areas, and changes in levels of heavy metals and bulk density were the most affected.