

Assessment of K Transport in Sandy Soils under sugarcane in the Cerrado Biome, Brazil

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Large areas under pasture, soybean and corn have been replaced by sugarcane in the Cerrado Biome. The effects of changes in land use on the sustainability of natural resources in this biome, e.g. soil and water, is not well known. The changes in land use may influence sandy soils, which predominate in large areas of Cerrado and have low water and nutrient retention capacity. Nutrient transport through the sandy soils profiles is likely and may cause groundwater contamination. The aim of this study was to evaluate K transport in Cerrado sandy soil profiles under sugarcane and natural vegetation. The study area was located at the countryside of the municipality of Mineiros, State of Goiás, Brazil. Samples were collected along three transects, two in sandy soils under cultivation and another in sandy soils under Cerrado. Ten soil profiles thirty feet away from each other were sampled in each transect at five different depths, 0-20, 20-40, 40-60, 100-120 and 160-180 cm using an auger. The field samples were collected in November, 2011 and April, 2012 and analyzed for K by flame photometric after Mehlich 1 extraction. Analytical data were statistically treated in a randomized block design and means compared by Tukey test at significance level of 1 and 5%. Regardless of land use type, K concentration follows similar pattern, i.e. potassium values at the upper layers of the soil profiles were higher than in the other layers. In the soil profiles under cultivation the observed high K values are possibly associated with fertilization whereas the high concentration of K in the soil profiles under Cerrado vegetation can be explained by the decomposition of organic matter. However,

9th International Symposium AgroEnviron
April 27 to May 1, 2014
Goiania, Brazil



K transport to deeper soil layers was observed at soil profiles under sugarcane when comparing the data collected at the two sampling periods (Nov. and April). Overall, K concentration decreased at 0-20 and 20-40 cm soil layer depth after the rainfall season (April). This indicates K release through the soil profiles under sugarcane which reduces the availability of this nutrient to plants and increases the risk of contamination of the underground water.

Key-words: *cultivation, sandy soil, solute transport.*