



Long-term C mineralization studies in high black carbon Anthrosols and adjacent low black carbon Oxisols

B. Liang, J. Lehmann*, D. Solomon

Crop and Soil Sciences, Cornell University, Ithaca, NY 14853, USA

*Corresponding author: CL273@cornell.edu

Black carbon (BC) in soil is important in the global biogeochemical C cycling. However, only little studies have been done on the mechanisms and rates of its mineralization in soil systems, and often the available studies on BC dynamics in soils show conflicting results. In order to assess the mineralization potential of BC and its contribution to organic C turnover in soils, samples from Anthrosols (Terra Preta) with high BC content and adjacent Oxisols with low BC content collected from Amazon region, Brazil were investigated using long-term indoor incubation experiment. Carbon mineralization was quantified by gravimetric method using soda lime as a trap. Our results show that Anthrosols with high BC content have significantly lower C mineralization rate compared to adjacent Oxisols with low BC content. These results indicate that the turnover of C in soils with high BC content is much lower than in soils with low BC content. The relationships between BC mineralization and formation of reactive surface functioning groups and with soil fertility indexes such as cation exchange capacity (CEC) have been discussed.