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A novel way of assessing C dynamics during urban organic waste composting and greenhouse gas emissions in tropical region

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ABSTRACT

Composting process is considered one of the main sustainable methods for treatment of the organic waste from urban centers. Our study aimed to evaluate the decomposing dynamics and the environmental conditions during urban waste composting measuring the temperature, pH and microbial activity. We also decided to follow the carbon and nitrogen dynamics by physical fractionation and determined greenhouse gas emissions. During composting, C accumulation in the heavy fraction indicated that a great and intimate association of C with minerals had occurred in the pile together with microbial or chemical decomposition. This is a novel way to determine how great amounts of OM are maintained in the mature compost and its structure, including the main reason for the great stabilization of the organic matter during the composting process. The emissions analysis showed methane as the most environmentally impacting greenhouse gas during urban waste composting.

Key-words: Labile organic matter; Aerobic degradation; Compost; Trash.