



Assessment of impacts of management practices on GHG emissions from Singapore soils

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Studies on soil greenhouse gas (GHG) fluxes from tropical grassland soils are limited compared to temperate climates. While multiple studies evaluate GHG emissions from tropical forest soils, studies from grassland soils are very rare. In this study, we measured soil greenhouse gas fluxes (CO_2 , CH_4 and N_2O) from two experimental sites in Singapore over one year. The sites were located at Bishan-Ang Mo Kio Park (urban grassland) and MacRitchie Reservoir Park (natural forest). GHG emissions from different management practices in urban grassland were evaluated by comparing untreated grassland soil (T1), compost amended soil (T2) and soil with N_2 -fixing plants as ground cover (T3). Furthermore, mineral N, microbial biomass C and N, TOC and TN content of soil, litter and grass biomass were analyzed.

Preliminary results indicated that untreated urban grassland and compost amended soils acted as sources for CO_2 , CH_4 and N_2O with T2 having the highest global warming potential. Parkland soils covered with N_2 -fixing plants acted as both source and sink for CH_4 and N_2O . Forest soils were also found to emit more N_2O but less CO_2 compared to urban grasslands soils. Furthermore, it was found to be a sink for CH_4 . Detailed results and GHG budgets will be presented.