

Microbial Respiration and Biomass in Tropical Soil and Litter

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Microorganisms are the most abundant organisms in soil and litter layers. In the northern hemisphere more than 80 % of the non-plant biomass of soil is provided by microorganisms. They are thus an important structural element of the soil compartment. Moreover they play a major role in the decomposition of organic matter and in the cycling of nutrients, thus fulfilling essential ecosystem functions. It follows that microbial biomass and metabolic activity are ecologically relevant end-points and appropriate parameters for the description of the structure and function of ecosystems.

We measured the microbial substrate-induced respiration (SIR) and the basal respiration (BR) of the top soil and of the litter layer of a primary forest, a secondary forest and of a plantation. Measurements were made in a continuous flow-through system connected with an Infra-red gas analyzer (IRGA). Microbial biomass was calculated on the basis of the SIR values.

First results indicate that the SIR-method is appropriate to measure microbial respiration of tropical soils and litter. From the data of the first three sampling dates it seems that microbial biomass of the three field sites does not differ significantly. There is a high natural spatial variability within each field site.