

IMPORTANCE OF IMPROVING BIOLOGICAL ACTIVITY OF TEA SOILS IN SOUTHERN PROVINCE OF SRI LANKA.

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The detrimental effects of soil pesticides on soil micro biota and biodiversity of the tea ecosystem are poorly understood. In the current study, microbial activity in southern tea soils of Sri Lanka as affected by application of commonly used soil pesticides and certain cultural practices was evaluated by measuring the soil respiration *in vitro* and *in vivo*.

CO₂ evolution rates in Southern tea soils were generally low as compared to soils in other areas. Herbicide and formalin applications significantly ($p=0.005$) suppressed the biological activity of Southern tea soils; the nematicide tested was less effective. Incorporation of compost and tea waste significantly ($p=0.005$) elevated CO₂ evolution rate in tea soils than that of in undisturbed, virgin forest soils. Forking strengthened microbial biomass through improved soil physical conditions. Soil biomass was positively correlated with growth of the test plants *viz.* tea and tomato.

Southern tea soils with low organic matter contents are exposed to repeated application of herbicides and negligence of important agronomic practices due to labour shortage. Such malpractices could aggravate potential build up of pesticide residues in the soil. Thus, improvement of soil organic matter status by incorporation of various organic amendments, establishment of green manure crops, rehabilitation of old tea soils and more importantly, restricted usage of agro-chemicals etc. is essential. These practices will assure long-term sustainable productivity and quality of soils as well as help degrade accumulated chemical residues and elevate densities of soil microbial communities. As a consequence, increased efficacy of bio control of nematodes and soil borne pathogens and proper administration of natural nutrient cycles could be envisaged.