

SOIL RESPIRATION AND MICROBIAL BIOMASS CARBON— THE POTENTIAL SENSITIVE BIOLOGICAL INDICES OF SOIL HEALTH

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A total of 432 soil samples drawn from six plots from the rhizosphere and non-rhizosphere of the most dominant and the abundant plant species at monthly interval over a period of 2 consecutive years (Jan 2014-Dec 2015) made materialistic basis for faunistic survey and other analysis of this study. Of the six plots sampled, 3 were located in forest floor and 3 were located in coal mine fallow lands. Above-ground plant diversity and density markedly differed from one site to the other. Faunal and fungal population density varied considerably from month to month. Population of both the groups resulted in their maximum at monsoon months and minimum at summer months. Significant and positive correlation were found to exist between the population of Collembola - Acarina and fungal flora in both the sites; in coalmine fallow land, fungal population showed weakly negative relationship with Collembolan population. Soil microbial biomass carbon content and soil respiration were taken into consideration to correlate these factors with soil fungi and soil fauna. Soil microbial biomass-C and soil respiration found significantly correlated with soil fungal and faunal population. Contribution of soil fungi in the soil respiration found highly significant and correlated with the cumulative influence of different soil factors in relation to soil fertility.

Keywords: *Soil fertility, Soil Microbial Biomass-C, Soil Respiration, Forest floor, coal mine fallow land, Acarine, collembolan and soil fungi*
