MICROARTHROPODS IN SOILS: ARE THEY INDICATORS OF ANYTHING USEFUL?

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Pitfall trap and Berlese funnel samples are relatively easy to collect and process. Though identification to precise species is daunting, resolution to the morphospecies level is relatively easy. Two types of information can be gained from such samples: quantitative biomass and qualitative individual species abundance. These two types of information may be used in very different ways.

Quantitative absolute density or biomass of total soil arthropods can be an assay of overall energy flow through the soil food web. Used in a comparative fashion with the proper control, it becomes an excellent monitor of soil health. Unlike measures like percent organic matter, which are relatively invariant and which do not distinguish between labile and non-labile nutrient pools, total biomass of soil arthropods responds rapidly to short term changes in labile nutrient pools.

Species compositions of the soil arthropod community are most effective in measuring the length of recovery periods to disturbance. Soil arthropod diversity is so high (even in many agricultural situations) that rates of recovery can be quantified (different species, different rates—recovery is never all-or-none). Conceptually arthropods will probably be most useful in indirectly distinguishing the hierarchy of variables affecting any soil ecosystem (e.g., what are the relative effects of cover-cropping, strip tilling, herbicide application, etc. on soil tilth).