

METABIOTIC INTERDEPENDENCY IN DECOMPOSER COMMUNITIES AND  
HUMUS FORMS: A CONCEPTUAL MODEL

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The linkage between soil organisms and soils is a controversial issue in the biological assessment of soils. Structural types of the soil biocoenosis (decomposer communities) and soil types are rarely congruent, whereas strong correlations exist between decomposer communities and humus forms. Current classifications of humus forms, however, do not sufficiently reflect this correlation, and they are restricted to forests and extensively used sites. In order to develop a genuine pendant to the soil biocoenoses, we propose to generalize the concept of humus forms and to extend it to all kinds of soil usage, including farmland.

Traditionally, humus forms are discriminated by characteristic combinations of humus horizons. Humus horizons are the result of metabiotic activity of organisms. Following WAID (1999), metabiosis is conceived as an indirect interaction, where organisms or functional groups of organisms create habitats for other organisms by modifying their environment. In the system soil biocoenosis/humus form, metabionts of several hierarchical levels can be designated, working in different spatial domains. Soil mixing organisms, for example, are higher ranking metabionts than litter comminuters. On arable land, man is a high ranking metabiont, too.

We demonstrate how these considerations result in a harmonized classification of decomposer communities and humus forms, respectively. There are two primary orders, mull and moder. Further subdivisions are conceived as partitions of a continuum ranging from A-Mull to F-Moder. This continuum is matched by typical formations of the soil biocoenosis which can be classified on a regional scale. We demonstrate this by elaborating the decomposer community types dominant in Central Europe, using character species of the annelid coenosis. The concept of humus forms, however, allows the integration of other taxonomical groups into the classification system.