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ECOSYSTEM SERVICES PROVIDED BY THE SOIL BIOTA

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Text: We connect the soil biota to ecosystem structure and functioning and the concept of ecosystem services, i.e. the benefits people derive from ecosystems, and to the impact of land management and environmental drivers of change upon such phenomena. Following recent developments in trait-based ecology, functional trait groups, based on organismal- and species- trait diversity, addressing multiple associations between traits and ecosystem services across different trophic levels, are proposed as more suitable than functional groups based on species diversity per se, in relating drivers of change to soil biota-mediated ecosystem functioning and services.

The concept of functional trait groups will be presented as useful when we wish to extend basic understanding of ecosystem functioning to practical management for enhanced ecosystem services. From a set of studies we infer that judicious choices of tillage systems and crops/cultivars in arable agriculture, animals in livestock husbandry and grazing systems, and crops and animals in mixed farming, optimize the delivery of ecosystem goods and services and, hence, make agricultural production systems both more efficient and more robust, i.e. adaptable to changing climate variability and environmental and economic risks. The evidence, limited as it is as yet, suggests that a functional trait-based approach is promising for the design of agro-ecosystems.

We will further elaborate this by putting such approach into the perspective of the management of a landscape, which is characterized by both agricultural crop and livestock diversity and 'wild' (be it planned or unplanned) biodiversity in a certain spatial configuration.