

Soil quality and ecosystem services

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SUMMARY

Healthy soils provide fertility, regulate water and organic matter, prevent erosion, suppress disease, and support constructions and infrastructures. The use of soils can only be cost-effective, and land use aims can only successfully be achieved if these ecosystem services are provided. In this paper, ecological risk assessment is approached by a focus on soil ecosystem services. Depending on the type of land use, ecological requirements are derived from relevant ecosystem services. These requirements represent aspects of the soil ecosystem that are crucial to establish the ecosystem service. Examples of ecological requirements are decomposition processes or soil structuring processes. Such requirements to soil functioning can be broken down into a set of indicators that are quantifiable parameters for soil ecosystem processes or structures. Well-chosen indicators may be used to assess the impact of any stressor on ecosystem functioning and, hence, ecosystem services. By way of example, in this paper we address soil contamination. Toxicity data were compiled from the literature to assess the effect of various chemicals on indicators representing soil ecosystem services of grassland under agricultural, natural and municipal use.