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ABSTRACT BOOK

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4. Soil health in achieving the Sustainable Development Goals 4.02 124990 - Towards harmonized soil health monitoring. Novel methods and perspectives and scientific, institutional, and societal challenges

HOW CAN WE MEASURE THE IMPACT OF AGROECOLOGICAL PRACTICES ON SOIL FUNCTIONS? FIRST ASSESSMENT AFTER 6 YEARS OF USING THE BIOFUNCTOOL SOIL HEALTH KIT

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The recent European directive, the Soil Monitoring Law, defines soil health as the capacity of soil to function and provide ecosystem services. However, this functionalist view of soil health does not align with current literature. Most studies and databases on soil health focus mainly on stock indicators such as C, N and microbial biomass, while indicators of soil functions are rarely included. To address these methodological limitations, a new field method has been developed to assess soil functions. Biofunctool® is a method that addresses the multifunctionality of soil. It takes into account the relationship between physico-chemical and biological properties. It includes nine low-cost field indicators that allow the assessment of three main soil functions: carbon dynamics, nutrient cycling, and maintenance of soil structure. Biofunctool® is particularly useful for assessing the impact of agricultural practices on soil health. The Biofunctool® methodology has been applied in a variety of soil contexts, including tropical soils in Asia and Africa, and in different agronomic situations, such as conservation agriculture, agroforestry and tree plantations. This study aims to present a synthesis of Biofunctool® applications to highlight their relevance for the evaluation of agroecological practices. The study combines the results of six published articles and ongoing projects that use the Biofunctool® methodology. Biofunctool® has been shown to improve our understanding of the impact of agricultural practices on soil functions and could serve as a basis for integrating soil health into broader environmental analyses. However, we will also discuss the current main limitations of the method and suggest different perspectives for improving the method and facilitating its wider dissemination.



Keywords: Soil health, Low-Cost Field indicator, Soil functions, Tropical soils, Soil Multifunctionality