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THE IMPORTANCE OF A HARMONIZED APPROACH IN SOIL MICROBIAL ANALYSIS: THE STANDARD OPERATING PROCEDURES OF THE FAO'S GLOBAL SOIL LABORATORY NETWORK (GLOSOLAN)

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Soil microbes are a key component of soil biodiversity and play an essential role in soil ecosystem services including nutrient cycling . Their presence and abundance are used as indicators to assess soil biodiversity and soil health status. Over the last several years, different parameters have been developed to monitor soil microbes, but the lack of harmonized protocols makes comparison of results among laboratories across the world challenging.
The FAO's Global Soil Laboratory Network (GLOSOLAN) has developed a bottom-up, inclusive approach to harmonize and publish standard operating procedures (SOPs) that actively involves all its members. Globally harmonized SOPs greatly enhance global cooperation and comparability of data.
According to the Global Soil Laboratory Assessment 2020, only about 44 percent of soil laboratories worldwide have the capacity and equipment needed to measure soil biological parameters. A joint working group on soil biological analysis established between GLOSOLAN and the FAO's International Network on Soil Biodiversity (NETSOB), has organized activities to build the capacity of soil laboratories worldwide to measure soil biological parameters. Moreover, globally harmonized SOPs have been published for the determination of soil respiration rate, microbial biomass, and enzyme activities. Other protocols on micro-, meso- and mega-fauna are under development as well and will be added to the other 25 SOPs already published by GLOSOLAN on soil chemical and physical parameters, which are open access in various languages.
Such SOPs are being adopted as new standards to harmonize soil data globally. When possible, GLOSOLAN encourages national governments to support soil laboratories to combine bottom-up and top-down activities for the development and adoption of globally harmonized SOPs.

Keywords: Soil microbes,Standard Operating Procedures,Harmonization of methods,Global Soil Laboratory Network