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Global Soil Biodiversity Observatory spearheads systematic assessment and monitoring of soil biodiversityÂ

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A global initiative to measure, monitor and protect soil biodiversity will intensify with the establishment of the Global Soil Biodiversity Observatory, headed by the Food and Agriculture Organization of the United Nations (FAO) and serving as a global reference for policy and scientific collaboration.

The Global Soil Biodiversity Observatory (GLOSOB) Â was launched by FAO at theÂ COP15, where signatories adopted the Convention of Biological Diversityâ??s 2020-2030 plan of action. This plan calls for systematic assessment and monitoring of soil biodiversity to aid implementation of theÂ Kunming Montreal Global Biodiversity FrameworkÂ (KM-GBF).

While various knowledge-sharing platforms and initiatives have been launched, there is currently a lack of standardized monitoring protocols and actionable strategies for integrating soil biodiversity into policy and national monitoring frameworks, according to Jacob Parnell, the lead author of aÂ new comment in Nature Ecology and Evolution. This commentary outlines the goals of the new Observatory and its top-down coordinating role, which includes working with a suite of bottom-up networks already involved in the project. An extensive amount of research has been conducted in this emerging field, which has revealed the need for expanded global coverage, as well as strengthening national monitoring capacities.

Soil biodiversity is clearly linked to agricultural soil fertility which supports the growth of key food crops, and the biotic communities living in harsh or unproductive farmlands â?? like hyper-arid, acidic or waterlogged areas â?? have an important function as genetic reservoirs. Yet, many of these below-ground biodiversity hotpots fall outside above-ground protected areas protected or areas under conservation. Major risks to soil biodiversity stem from extreme climate events, land

degradation, deforestation, invasive species and pollution.

A core GLOSOB objective is to define improved soil biodiversity indicators â?? tracking essential biodiversity variables (EBVs) on both taxonomic and functional planes â?? and build capacity to validate policy agendas aimed at conservation and sustainable management practices, according to Parnell.

Currently, there is reasonable data on the distribution of microbial soil carbon and of the soil macrofauna community â?? both of which highlight soil quality issues â?? but the evidence base gets thinner beyond earthworms, nematodes and common bacterial species. GLOSOB is designed as a tiered system to allow for steady expansion of measurement capacities to extend from soil chemical properties, enzymatic activities and to tracking decomposition patterns using leaf litter bags and steadily increasing to more complex nutrient cycling components and on to intraspecific microbial genetic diversity throughÂ shotgun metagenomic sequencing. Knowing more will require investments in laboratory facilities, training programmes and standardized monitoring frameworks that enable all countries to collect, analyze and properly interpret soil biodiversity data. Another key step is to integrate biodiversity considerations into conventional soil surveys and national soil information systems.

FAO already leads theÂ Global Soil Partnership, which held itsÂ 13th Plenary AssemblyÂ last June. It serves as a hub for other initiatives and has catalyzed successful conservation projects such as theÂ Soil DoctorsÂ andÂ Recarbonization of Global Agricultural SoilsÂ (RECSOIL). Â FAOâ??s leadership in sustainable soil and land management was front and center during the Grand Opening of this yearâ??s Assembly, which also marked 80 years of the founding of the Organization. The high-level event brought together global leaders and experts to explore data-driven solutions and technological innovations. .

FAO Director-General QU Dongyu highlighted the Organizationâ??s commitment to soil health said â??Pioneering next-generation soil mapping with cutting-edge technology, FAO has consistently been a champion of soil health as a foundation of global food securityâ?•.