KEEP SOIL ALIVE, PROTECT SOIL BIODIVERSITY

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Background of the global symposium on soil biodiversity

In finding solutions to the impacts of a projected world population growth, the increase in food demand, as well as the ever-present need to eradicate poverty and malnutrition, we will need to rely more than ever on the sustainable use of soils and the ecosystem services they provide. Reversing soil degradation and restoring soil functions and soil health offer a considerable opportunity to address the importance of soil biodiversity in reversing the worldwide trend of degradation.

- Sustainable Use of Soil Biodiversity has three main objectives:

❖ The promotion of awareness raising, knowledge and understanding of key roles, functional groups and impacts of diverse management practices on soil biodiversity and soil health in different farming systems and agro-ecological and socio-economic contexts.

❖ The promotion of ownership and adaptation by farmers of integrated soil biological management practices as an integral part of their agricultural and sustainable livelihood strategies.

❖ The strengthening of collaboration among actors and institutions, while mainstreaming soil health and biological management into agricultural, land management and rehabilitation programmes.

The specific objectives of the symposium were to:

1. Examine the current scientific, technical, indigenous and traditional knowledge on the role of soil biodiversity on food production, human health and on sustaining biodiversity aboveground.
2. Identify knowledge gaps and explore opportunities for collaborative research, capacity building and technical cooperation.
3. Identify limitations and opportunities to promote the sustainable use of soil biodiversity, knowledge sharing and capacity building.
4. Identify policy options to protect soil biodiversity and encourage the adoption of practices that enhance it.
5. Helping build a broader appreciation of soil biodiversity and our dependence on the many benefits it provides.
6. Present national, regional and global initiatives that support the effective design, planning, implementation, monitoring and reporting of solutions and their contribution to the achievement of the SDGs.

Theme 1. Symposium themes and core questions

Theme 1 aimed to discuss about the latest discoveries on taxonomic and genetic diversity of soil organisms, the benefits arising from soil biodiversity and the status of the world soil biodiversity, in order to strengthen dialogue between all stakeholders.

1. What recent discoveries have been made on soil organisms' taxonomic and genetic diversity and their distribution patterns?
2. How have technological advances and traditional and indigenous knowledge supported soil biodiversity discoveries?
3. What is the latest knowledge on the ecosystem services delivered by soil biodiversity?
4. What is the status and projected trends of soil biodiversity (global/regional/national levels)?
5. How can we best measure, map, monitor and report on soil biodiversity? What are the most useful indicators organisms?

Theme 2. Soil biodiversity in action

Theme 2 aimed to review the role and the application of soil biodiversity in the field. Experts presented effective and replicable methodologies, techniques, technologies and practices that promote the conservation and sustainable use of soil biodiversity. The overall view was to upscale those sustainable approaches to improve productivity, accelerate biodiversity conservation along with the sustainable use of its resources, as well as guaranteeing the equitable participation in productive landscapes.

1. What are the main drivers of soil biodiversity loss and what are the consequences? How do losses vary across environments? Can loss of soil biodiversity be reversed?
2. How can soil biodiversity support the transformation of agricultural systems toward achieving sustainable intensification?
3. How can soil biodiversity support the One Health approach?
4. What are the currently successful methodologies, techniques, technologies and practices in place that promote soil biodiversity conservation, sustainable use of its resources and equitable participation in productive landscapes? How can we upscale biodiversitybased solutions and other sustainable approaches?
5. What kind of actions should be taken to prevent and control the introduction of nonindigenous plants, animals, microorganisms, genes and diseases that could negatively impact the different components of soil biodiversity?
6. What are the most effective knowledge sharing and capacity building approaches to raise awareness on the better use of soil biodiversity into agricultural practices?
7. What are the methodologies, techniques, technologies and practices in place to monitor antimicrobial residues in soil and their impact on biodiversity and antimicrobial resistance?

Discussion summary

Discussion summary We define soil biodiversity as the variety of life belowground, from genes and species to the communities they form, as well as the ecological complexes to which they contribute and to which they belong, from soil micro-habitats to landscapes. Soil biodiversity is essential for most of the ecosystem services provided by soils, which benefit soil species and its multiple interactions (biotic and abiotic) in the environment. Soil biodiversity also supports most surface life forms through the increasingly well understood links between above and belowground. For humans, the services provided by soil biodiversity have strong social, economic, health and environmental implications (FAO et al., 2020). The important role that soil biodiversity plays in ecosystem functioning and the resulted services can be threatened by unsustainable human activities, climate change as well as human-induced natural disasters.

Nature-based solutions offer the best route to achieve human well-being, tackle climate change and protect our living planet. Yet, nature is in crisis. We are losing species at a rate a thousand times greater than at any other time in recorded human history and one million species face extinction (Dasgupta, 2021). We must take advantage of this momentum and the great interest and concern that exists about soil biodiversity loss, to implement sound policies and actions for the conservation, management and sustainable use of soil biodiversity.