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Food and Agriculture
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Продовольственная и
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Объединенных Наций

Organización de las
Naciones Unidas para la
Alimentación y la Agricultura

منظمة
الغذية والزراعة
للأمم المتحدة

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 8.4 of the Provisional Agenda

Twentieth Regular Session

Rome, 24–28 March 2025

PROGRESS REPORT ON THE IMPLEMENTATION OF THE INTERNATIONAL INITIATIVE FOR THE CONSERVATION AND SUSTAINABLE USE OF SOIL BIODIVERSITY

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I. INTRODUCTION

1. The International Initiative for the Conservation and Sustainable Use of Soil Biodiversity (known as the International Initiative for Soil Biodiversity) was established in 2002¹ as a cross-cutting initiative within the Convention on Biological Diversity's (CBD) programme of work on agricultural biodiversity to increase recognition of the essential services provided by soil biodiversity across all production systems and its relation to land management, including by sharing information, increasing public awareness, promoting education and improving capacity building.²
2. This document provides some background and describes progress made in the implementation of the International Initiative for Soil Biodiversity since the Commission's Nineteenth Regular Session.

II. FAO ACTIVITIES

3. Sustainable soil management is at the heart of several global agendas and international policy frameworks, and soil biodiversity and the ecosystem services it provides will be key to the success of the UN Decade on Ecosystem Restoration.
4. The fifteenth meeting of the Conference of the Parties to the CBD (COP 15) adopted, through Decision 15/28, the Plan of Action (2020–2030) for the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity and invited FAO through the Global Soil Partnership (GSP)³ to facilitate its implementation.⁴ FAO, through the GSP's International Network on Soil Biodiversity (NETSOB),⁵ is leading the implementation of the Plan of Action, in collaboration with governments, academic and research bodies, and other relevant international organizations, such as the CBD Secretariat and the Global Soil Biodiversity Initiative (GSBI).⁶
5. FAO established the Global Soil Biodiversity Observatory (GLOSOB) to facilitate the monitoring and forecasting of the conditions of soil biodiversity and soil health. The GSP's Intergovernmental Technical Panel on Soils (ITPS) and NETSOB, in collaboration with other international initiatives such as the GSBI and the Soil Biological Observation Network (SoilBON)⁷ presented an implementation plan for GLOSOB at the 12th GSP Plenary Assembly in June 2024,⁸ including a tiered approach with different indicators and metrics for monitoring soil biodiversity. The GSP is now working to secure funding to start implementing national benchmark sites for soil biodiversity monitoring and to develop a training programme on the measurement, monitoring and reporting of soil biodiversity.
6. To assess national capacities for monitoring soil biodiversity and to identify and address the direct and indirect drivers of soil biodiversity loss and land degradation, NETSOB designed a survey on national initiatives and capacity to assess soil biodiversity as well as on the methods and metrics used. The global survey was sent to more than 70 000 researchers and practitioners in over 130 countries, and more than 2 000 responses were received. Results of the survey will be published in a special issue of the journal *Soil Organisms* in 2025.
7. The GSP's Global Soil Laboratory Network (GLOSOLAN) and NETSOB are building and strengthening the capacity of laboratories to develop and adopt harmonized protocols for sampling and measuring soil biodiversity functional groups and functions, promoting tools for collecting and digitizing soil biodiversity data, and improving the mapping capabilities of Parties, acknowledging the differences in soil types across regions. In coordination with GLOSOLAN,⁹ NETSOB members have

¹ UNEP/CBD/COP/DEC/VI/5, paragraph 13.

² UNEP/CBD/COP/DEC/VIII/23.

³ <https://www.fao.org/global-soil-partnership/en/>

⁴ CBD/COP/DEC/15/28, paragraphs 1 and 7.

⁵ <https://www.fao.org/global-soil-partnership/netsob/en/>

⁶ <https://www.globalsoilbiodiversity.org/>

⁷ <https://www.globalsoilbiodiversity.org/soilbon>

⁸ GSPPA: XII/2024/9, Annex 1

⁹ <https://www.fao.org/global-soil-partnership/glosolan/en/>

published harmonized standard operating procedures for soil microbial biomass¹⁰ and respiration.¹¹ Standard operating procedures for enzyme activity, soil mesofauna and nematodes are being finalized. This effort to harmonize methodologies is essential as a preliminary step towards addressing the request to the GSP to include soil biodiversity as a component of soil survey studies and to develop soil biodiversity indicators.

8. Within the framework of the GSP, three other technical networks help to conserve and sustainably manage soil biodiversity. The International Network on Black Soils (INBS)¹² aims to protect highly productive and carbon-rich agricultural soils from unsustainable management practices and excessive use of agrochemicals, to prevent carbon loss and to mitigate erosion processes as well as nutrient imbalances, acidification, compaction and loss of soil biodiversity. In addition, the International Network on Soil Fertility and Fertilizers (INSOILFER)¹³ aims to adopt and implement sustainable soil fertility management, avoid underuse, misuse and overuse of fertilizers, reduce the environmental and health impacts of unsustainable fertilizer use leading to soil biodiversity losses and promote the use of alternative high quality nutrient sources, including biofertilizers. INSOILFER also works on improving knowledge and access to biofertilizers, biostimulants and other alternative solutions for crop nutrition as a viable and cost-effective solution to the current global fertilizer crisis and in line with the principles of the International Code of Conduct for the Sustainable Use and Management of Fertilizers.¹⁴ In April 2022, the GSP launched the International Network on Soil Pollution (INSOP)¹⁵ with the overall aim of stopping soil pollution and achieving the global goal of zero pollution. To this end, INSOP works to improve knowledge of the full cycle of soil pollution, from assessment to remediation, and of the effects of soil pollution on environmental and human health and on soil ecosystem functions and services. INSOP also aims to strengthen technical capacities and legislative frameworks for the prevention of soil pollution and promotes the exchange of experiences and technologies related to the sustainable management and remediation of polluted soils. The use of soil biodiversity for the remediation of polluted soils (bioremediation) and as indicators of contamination are key aspects of INSOP's work, which thus contributes to the implementation of the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity.

9. CBD COP Decision 15/28 also invited academic and research bodies, relevant organizations, networks and Indigenous Peoples and local communities, farmers, women and youth, to increase knowledge and promote awareness-raising activities on the importance of soil biodiversity and to promote further research in order to address gaps identified in the plan of action. In 2024 FAO published the Commission's background study papers on *Sustainable use and conservation of soil microorganisms and invertebrates contributing to bioremediation and nutrient cycling*¹⁶ and *Sustainable use and conservation of microorganisms of relevance to ruminant digestion*.¹⁷ The GSP is also contributing soil biodiversity insights to an ongoing assessment of the contribution of livestock to food security and sustainable agrifood systems and to the World Bank Flagship Report on Biodiversity in Agriculture. NETSOB is also publishing several scientific papers that review scientific literature from the past decade to examine methods for, and the geographic distribution of, soil biodiversity measurements. The

¹⁰ FAO. 2024. *Standard operating procedure for soil microbial biomass (carbon): chloroform fumigation-extraction method*. Rome. <https://doi.org/10.4060/cc9423en>

¹¹ FAO. 2023. *Standard operating procedure for soil respiration rate*. Rome. <https://openknowledge.fao.org/handle/20.500.14283/cc4082en>

¹² <https://www.fao.org/global-soil-partnership/inbs/en/>

¹³ <https://www.fao.org/global-soil-partnership/global-soil-partnershipinsoilferen/en/>

¹⁴ FAO. 2019. *The International Code of Conduct for the Sustainable Use and Management of Fertilizers*. Rome. <https://www.fao.org/3/ca5253en/CA5253EN.pdf>

¹⁵ <https://www.fao.org/global-soil-partnership/insop/en/>

¹⁶ Csorba, C., Hackl, E., Reichenauer, T., van der Putten, W. & Sessitsch, A., 2024. *Sustainable use and conservation of soil microorganisms and invertebrates contributing to bioremediation and nutrient cycling*. Background Study Paper, No. 74. FAO Commission on Genetic Resources for Food and Agriculture. Rome. <https://doi.org/10.4060/cd0147en>

¹⁷ Huws, S.A., Oyama, L.B. & Creevey, C.J. 2024. *Sustainable use and conservation of microorganisms of relevance to ruminant digestion*. Background Study Paper, No. 75. FAO Commission on Genetic Resources for Food and Agriculture. Rome. <https://doi.org/10.4060/cd0155en>

network is also working on compiling case studies on best practices for conserving and sustainably using soil biodiversity that will be published in 2025.

10. The GSP raises awareness and develops capacities on the multiple benefits and applications of soil biodiversity through its Global Soil Doctors programme.¹⁸ This farmer-to-farmer training programme shares current knowledge and tools for soil health assessment and sustainable soil management practices that avoid, reduce or reverse soil biodiversity loss. To date, the Global Soil Doctors Programme has built the capacity of 657 trainers and 1 800 Soil Doctor farmers, and has reached over 11 500 farmers in 26 countries.

11. The GSP continues to expand its Recarbonization of Global Agricultural Soils (RECISOIL)¹⁹ initiative to recarbonize agricultural soils and contribute to climate change mitigation and adaptation, promoting the adoption of sustainable soil management practices and tools to increase the soil organic carbon stocks and soil biodiversity of agricultural lands. The initiative is being implemented in four countries, namely Costa Rica, Ghana, Mexico and Togo, where the baseline has been defined and sustainable soil management practices are being implemented. Four other countries have joined the initiative and are launching their pilot projects (Armenia, Kazakhstan, Morocco and Uzbekistan). The RECISOIL initiative builds on the Global Soil Organic Carbon Sequestration Potential map (GSOCseq)²⁰ to identify hotspots that can significantly contribute to mitigating agricultural emissions, contribute cost-effectively to mitigating climate change, preserve soil biodiversity and increase the resilience of terrestrial ecosystems. The RECISOIL initiative also contributes to restoring degraded lands and is assisting countries to improve their reporting capacities on several of the Sustainable Development Goals, in particular on Target 2.4 on sustainably managed agricultural land and Target 15.3 on combating desertification and land degradation.

¹⁸ <https://www.fao.org/global-soil-partnership/soil-doctors-programme/about-the-programme/en/>

¹⁹ <https://www.fao.org/global-soil-partnership/areas-of-work/recsoil/recsoil-home/en/>

²⁰ <https://www.fao.org/global-soil-partnership/gsocseq-map/en>