Food and Agriculture Organization of the United Nations

GLOBAL SOIL PARTNERSHIP

Conclussions and way forward

Ronald Vargas

Secretary, Global Soil Partnership

GLOBAL SYMPOSIUM ON SOIL BIODIVERSITY | 19-22 April 2021

Successful event?

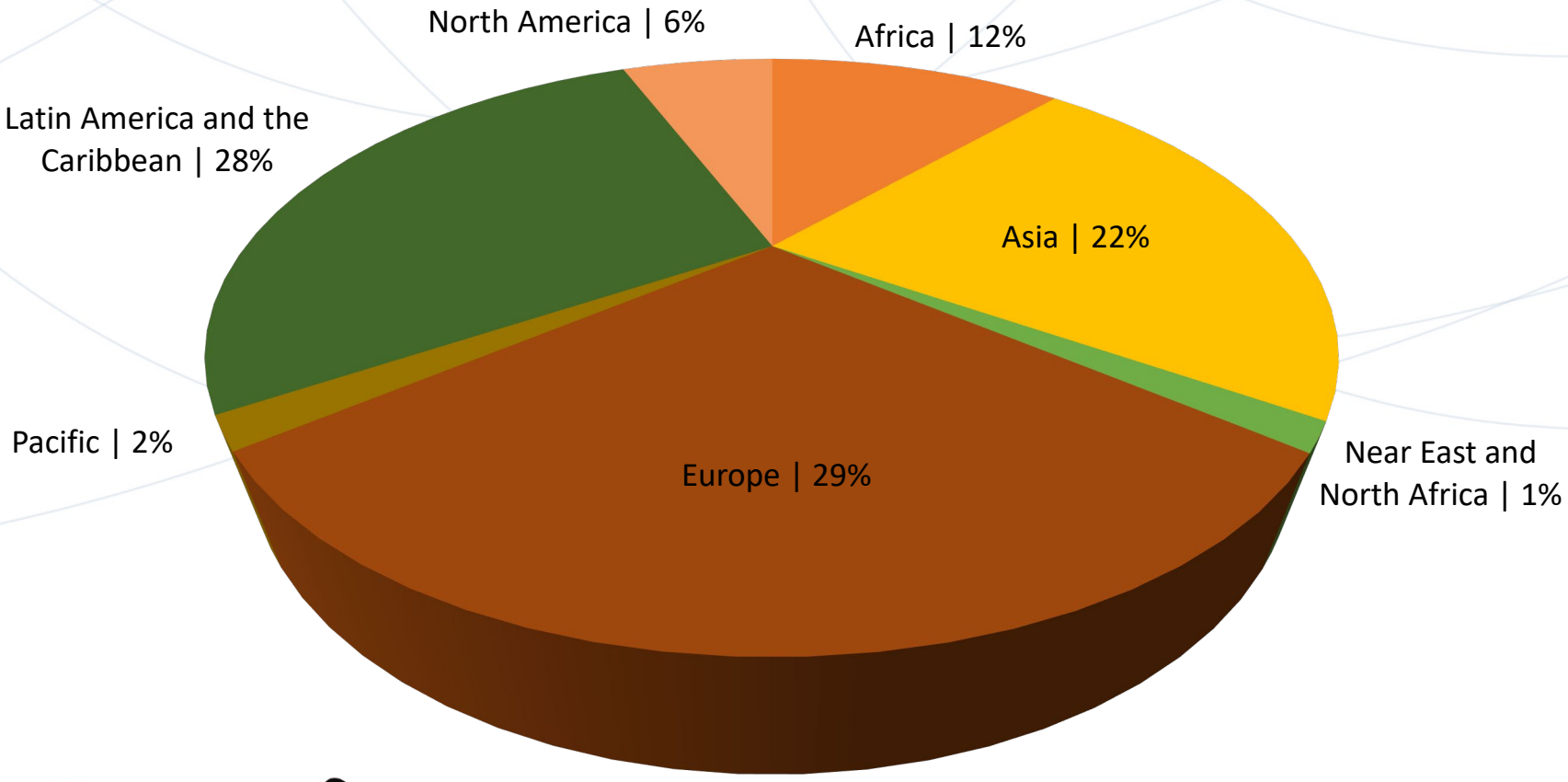
- Due to COVID19 – Postponed since March 2020
- A problem always an opportunity
- A virtual symposium that demonstrated to be more inclusive and accessible.
- Less carbon-footprint, far more cheaper…….

Attendance

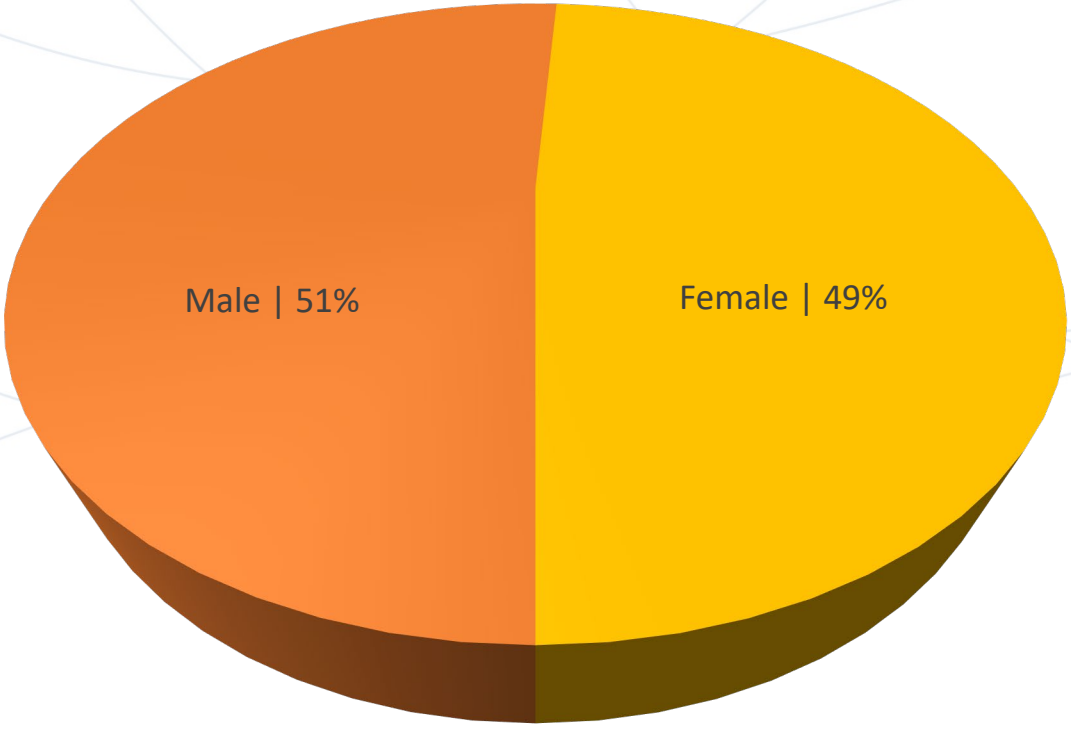
A total of **161 countries** represented

- DAY1: **4802 participants**
- DAY2: **3806 participants**
- DAY3: **3065 participants**

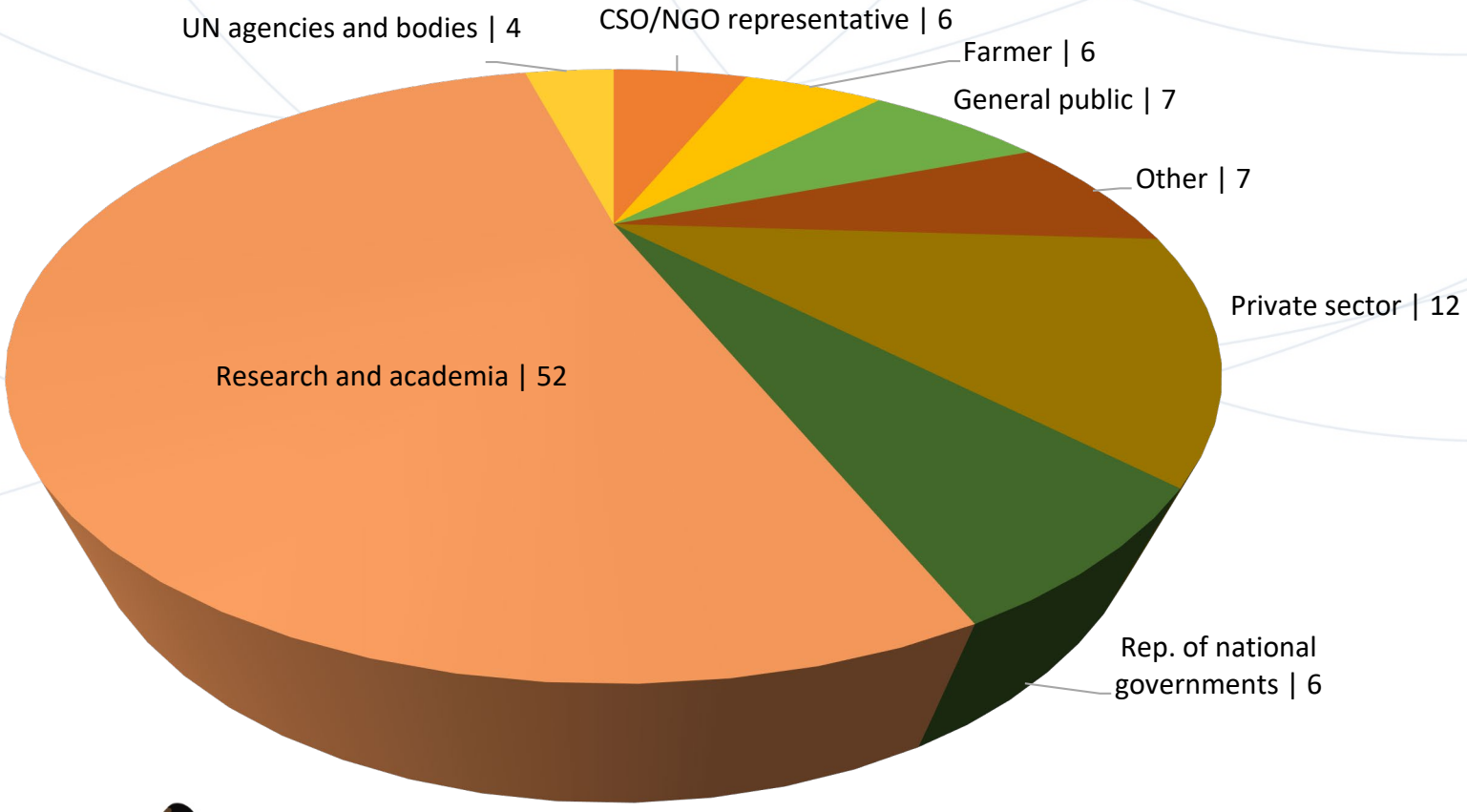
Participants per region



Gender balance (%)

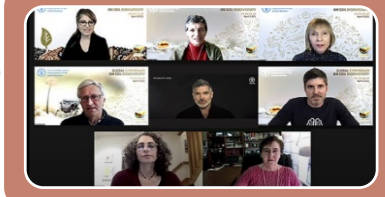


Multi-stakeholder Meeting (%)



PLENARY HIGHLIGHTS

Dynamic and interactive plenary sessions



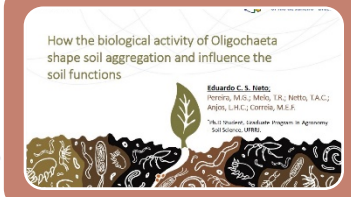
8 distinguished guests

21 renowned key note speakers

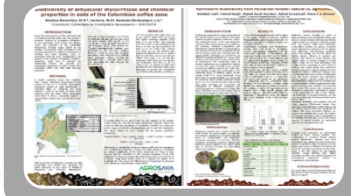
8 hours of plenary sessions

SCIENCE AS THE BASIS

+250 scientific abstracts submitted



96 presentations delivered

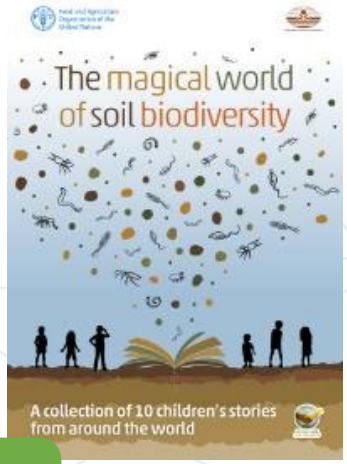


50 abstracts (posters) open for public voting for 4 days

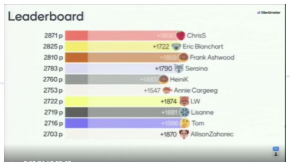
24 hours of parallel sessions and open discussion

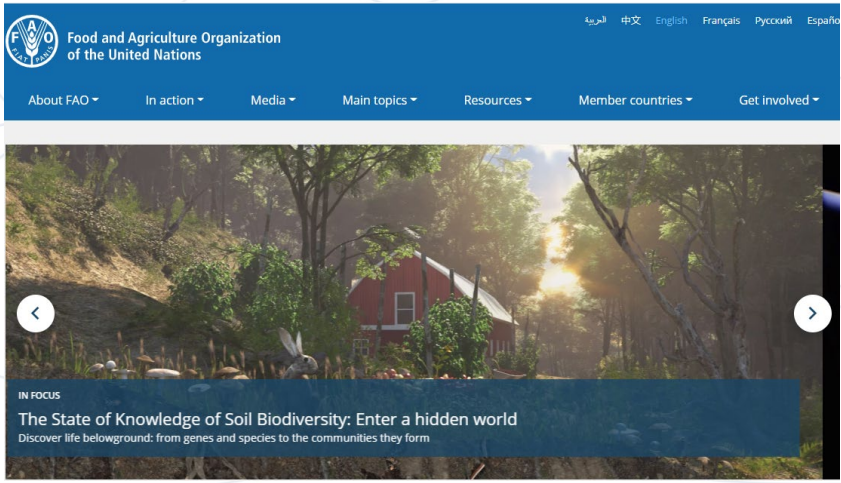
Soil science should also go beyond soil scientists: children, youth

Launch of a children book

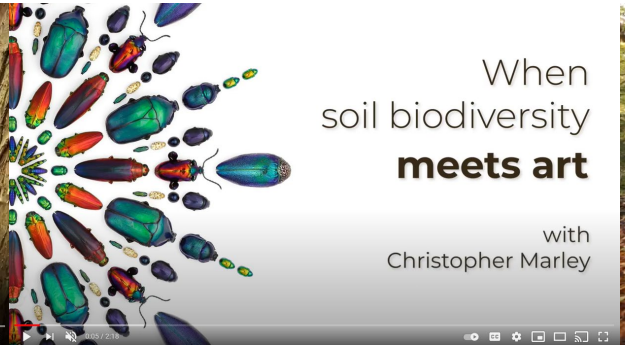


Live quiz on soil biodiversity





Artist's voices on soil biodiversity



Soil Biodiversity and soil science should be in the news and move to general public and policy makers

+50 articles in the main world newspapers

The Guardian

The future of our soil hangs in the balance as the UN prepares for the first Global Symposium on Soil Biodiversity, with scientists warning that soil degradation is as important as the climate crisis and destruction of the natural world above ground.

ElPaís.cr

Foro mundial examina biodiversidad del suelo y seguridad alimentaria

THE NATIONAL TRIBUNE

Giving a voice to soil organisms – our silent allies in fight against hunger

中华人民共和国中央人民政府 www.gov.cn

全球土壤生物多样性研讨会召开

Rencontre en visioconférence : le Colloque international sur la biodiversité des sols démarre ce 19 jusqu'au 22 avril 2021

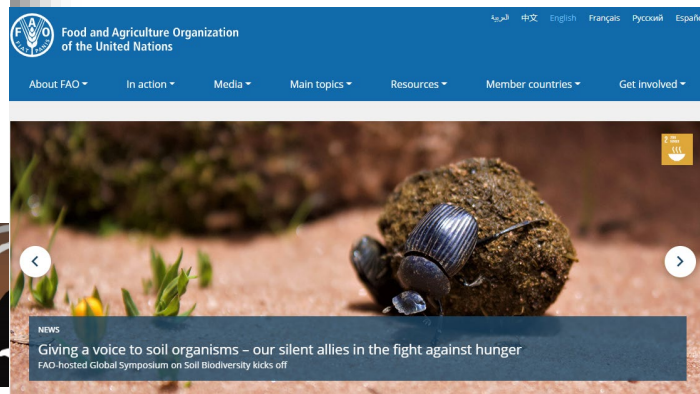
FAO-Symposium zum Erhalt der Boden-Biodiversität

#SoilBiodiversity

Facebook
LinkedIn
Slideshare
Flickr
Youtube

Biodiversité des sols

La FAO fait l'état des lieux des connaissances



Findings/Conclusions

Notable progress on soil biodiversity

1. Global, regional and national initiatives on Soil Biodiversity and soils overall;
2. Greater computing power, machine learning, bioaugmentation, artificial intelligence, etc.;
3. Molecular tools to describe unknown biodiversity;
4. Establishment of some proxies of soil biodiversity activity: Tea bag index, etc.;

Notable progress on soil biodiversity

5. Growing awareness on the value of ecosystem services provided by soils and soil biodiversity;

6. Multiple stakeholders addressing and using soil biodiversity for multiple land uses (not only agriculture);

7. New approaches: Syntropic Farming, Synecoculture (towards reduced agrochemical inputs);

8. Recognition that SOIL IS ALIVE! Soil health!!!!!!

But still gaps and challenges

1. **Soil Biodiversity** should be recognized by all the **Sustainable Development Agendas** including the GBF Post2020 (we need targets and **INDICATORS**);

2. Soil Biodiversity should move **from research to full application/use in all sectors** (**scaling up investment**);

3. **Most biota remains unknown and un-named**: the **List of Red Species does not include soil biodiversity**;

4. **Lack of soil biodiversity data/information** and standard protocols for data collection. Geographical unbalance;

5. **Soil information systems and soil surveys** do not include fully soil biodiversity;

But still gaps and challenges

6. Need of **enhancing human capacities** in terms of new methods, tools and strength fields like Taxonomy;

7. **Incentives or payments for ecosystem services** provided by soils should be established;

8. **Ecosystem restoration** shall include **soil biodiversity/soil health** as its basis;

9. **Bioremediation should be scaled up** to address soil pollution;

10. Need to invest on research on **soil-borne diseases** (solution is there) and **scale up soil biodiversity responses in the agricultural sector and climate change mitigation/adaptation.**

11. **Soil health** (including soil biodiversity) should be mainstreamed into the **One health approach** (soil, plant, environment and human health), **microbiome, AMR**.

Soil Biodiversity data/information still scarce

Is this enough?

GUIDELINES FOR
SOIL DESCRIPTION

BIOLOGICAL ACTIVITY

In this section, evidence of past or present biological activity, including human activity, is recorded.

GE	Greenish
GR	Grey
GS	Greyish
BU	Blue
BB	Bluish-black
BL	Black
MC	Multicoloured

Roots

The recording of both the size and the abundance of the roots is in general sufficient to characterize the distribution of roots in the profile. In specific cases, additional information can be noted, such as a sudden change in root orientation.

The abundance of roots can only be compared within the same size class. The abundance of fine and very fine roots may be recorded similarly as for voids (Figure 8), expressed in the number of roots per decimetre square.

Size (diameter)

Table 79 indicates the classification of the size of roots.

Abundance

Table 80 indicates the classification of the abundance of roots.

TABLE 79
Classification of the diameter of roots

		mm
VF	Very fine	< 0.5
F	Fine	0.5–2
M	Medium	2–5
C	Coarse	> 5

Note: Additional codes are: FF, very fine and fine; FM, fine and medium; and MC, medium and coarse.

TABLE 80
Classification of the abundance of roots

		< 2 mm	> 2 mm
N	None	0	0
V	Very few	1–20	1–2
F	Few	20–50	2–5
C	Common	50–200	5–20
M	Many	> 200	> 20

TABLE 81
Classification of the abundance of biological activity

Other biological features

Biological features, such as krotovinas, termite burrows, insect nests, worm casts and burrows of larger animals, are described in terms of abundance and kind. In addition, specific locations, patterns, size, composition or any other characteristic may be recorded.

Abundance

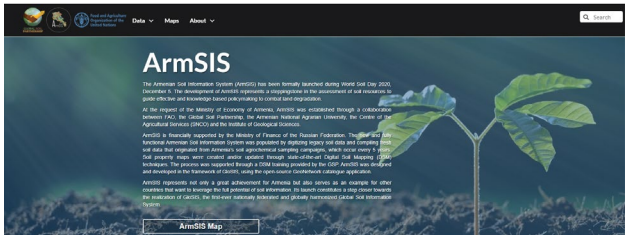
Abundance of biological activity is recorded in the general descriptive terms indicated in Table 81.

Kind

Examples of biological features are given in Table 82.

GLOSIS
Global Soil Information System

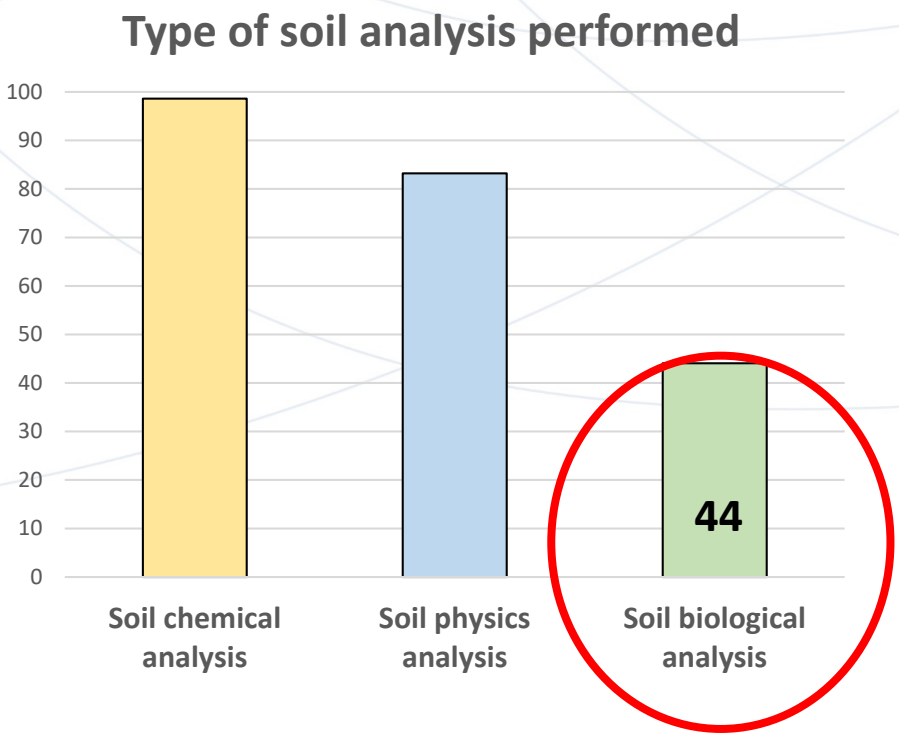
Soil biodiversity as part of Soil Information Systems?



Soil Biodiversity data/information still scarce

GLOSOLAN
GLOBAL SOIL LABORATORY NETWORK

Are we ready to generate soil biological analysis?



A network of **680 soil laboratories** from **150 countries** in the world

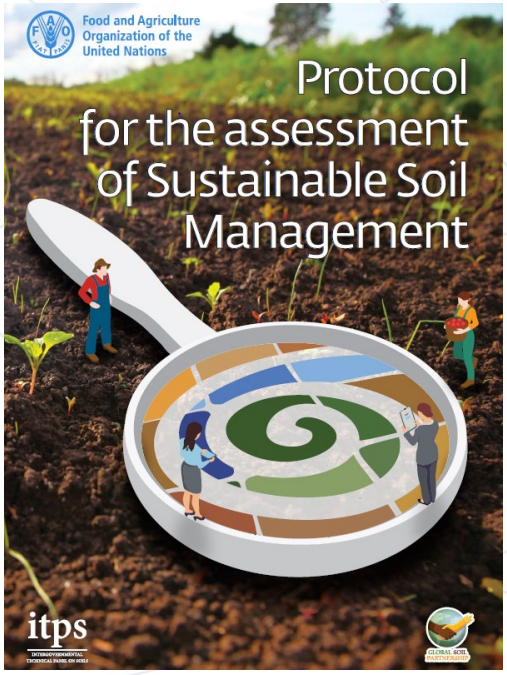
Objective: *build and strengthen the capacity of laboratories in soil analysis and to respond to the need for harmonizing soil analytical data*

↓

Harmonization of Standard Operating Procedures to measure soil biological parameters:

- Soil respiration rate
- Microbial enzyme activities
- Microbial biomass C and N by chloroform fumigation-extraction

Need of an (or set) Indicator to measure/monitor soil Biodiversity/Soil health



Post 2020 Global Biodiversity Framework Targets/Indicators

Perfection/compromise

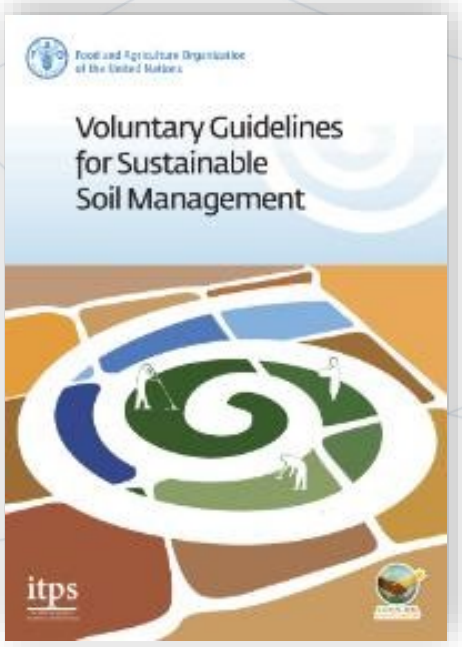
Recommended set of indicators

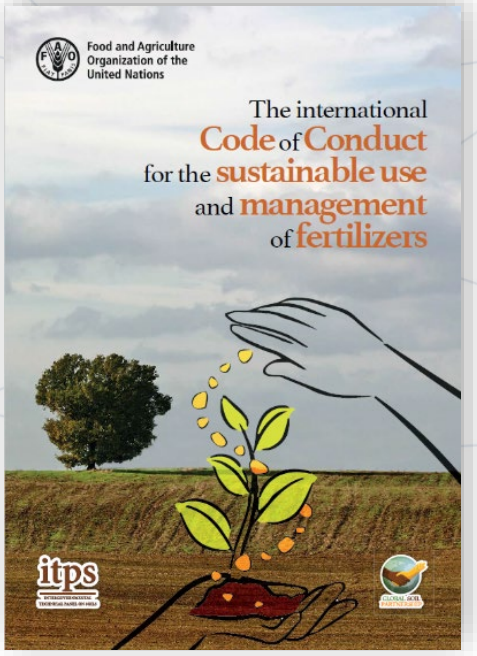
- Soil productivity (ton /Ha / year)
- Soil organic carbon (%)
- Soil physical properties (soil bulk density)
- Soil biological activity (respiration rate) associated with an additional biological indicator

Additional indicators for specific cases

- Soil nutrients (P)
- Soil erosion
- Soil salinity (EC)
- Soil biological activity
- Soil biodiversity
- Soil pH
- Available water capacity
- Infiltration field test
- Penetration resistance field test
- Soil pollution

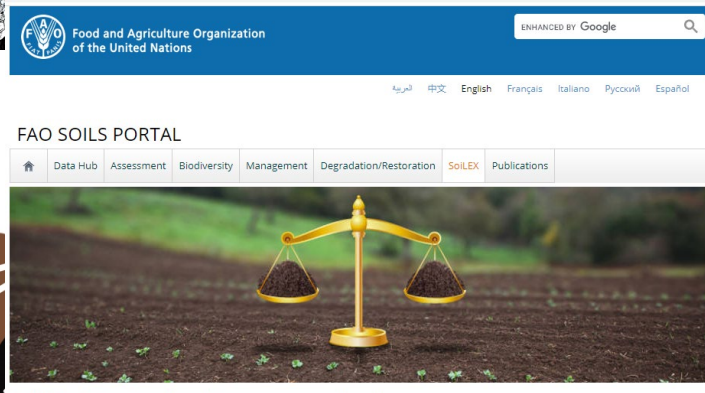
Need to bring science into policy: advocating countries to adopt good practices but also we need to integrate soil biodiversity to Sustainable Soil Management





Integration

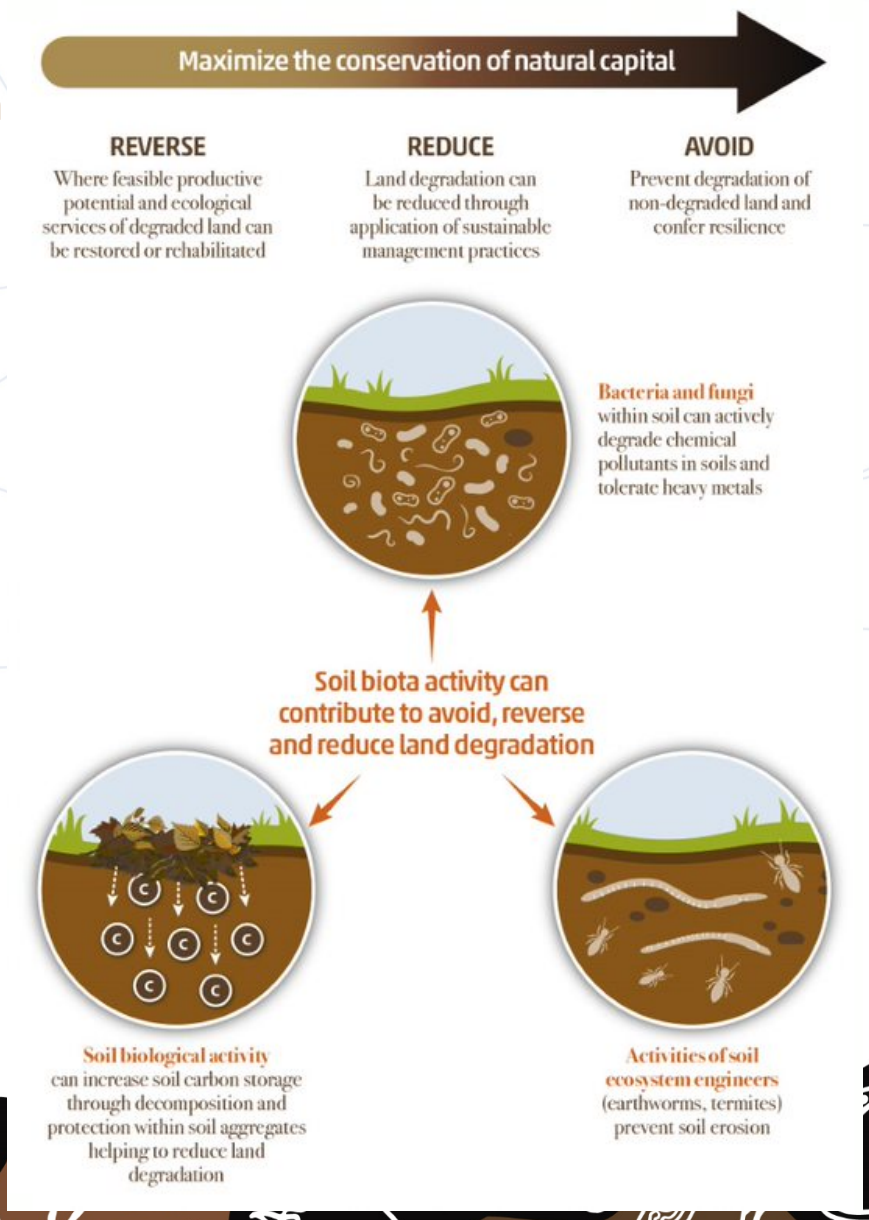
Compliance?



Way forward

What are the potentialities?

- **Food security and food safety:** improvement of agricultural production (biofertilizers, nitrogen fixation, pathogen control).
- **Biological control:** pests, diseases.
- **Environmental remediation (bioremediation):** bioaugmentation, phytoremediation, vermiremediation.
- **Climate change mitigation/adaptation:** carbon sequestration, GHG.
- **Nature-based solutions:** stimulate the growth and activities of soil fauna for ecosystem restoration.
- **Nutrition and human health:** vaccines, medicines, traditional medicine, microbiome.



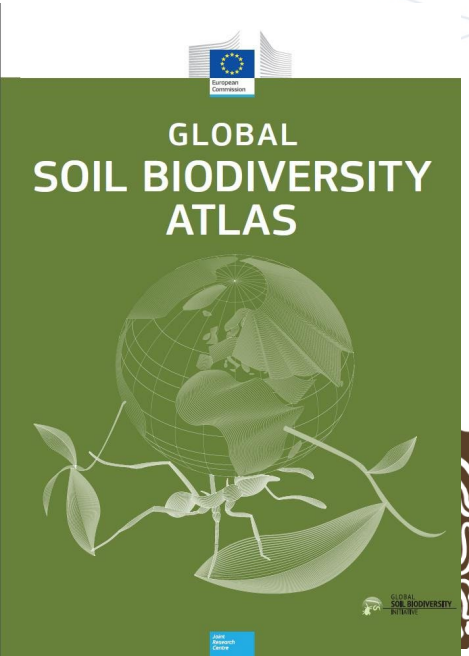
Where to start? Framework

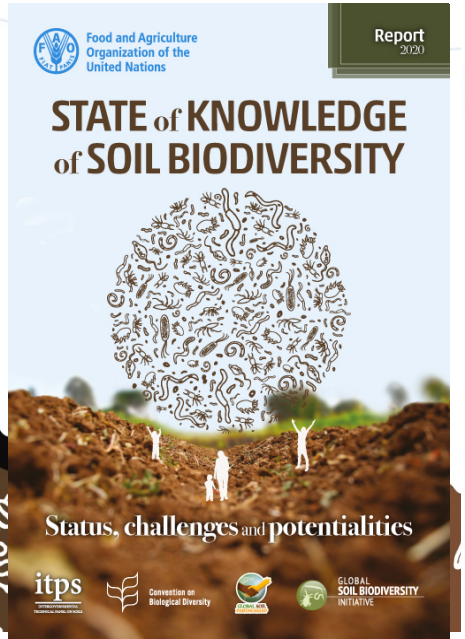
GLOBAL SOIL PARTNERSHIP

FAO STRATEGY ON MAINSTREAMING BIODIVERSITY ACROSS AGRICULTURAL SECTORS

GLOBAL SOIL BIODIVERSITY INITIATIVE

Soil BON





UN environment programme

CBD

Convention on Biological Diversity

Distr.
GENERAL

CBD/SBSTTA/24/7/Rev.1
4 December 2020

ORIGINAL: ENGLISH

SUBSIDIARY BODY ON SCIENTIFIC,
TECHNICAL AND TECHNOLOGICAL ADVICE
Twenty-fourth meeting
Venue and dates to be determined
Item 7 of the provisional agenda*

REVIEW OF THE INTERNATIONAL INITIATIVE FOR THE CONSERVATION AND SUSTAINABLE USE OF SOIL BIODIVERSITY AND UPDATED PLAN OF ACTION

Note by the Executive Secretary

INTRODUCTION

1. In decision 14/30, paragraph 24 (b), the Conference of the Parties requested the Executive Secretary to review the implementation of the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity, in consultation with the Food and Agriculture Organization of the United Nations (FAO) under the framework of the Global Soil Partnership (GSP) as well as other interested partners, and present an updated draft plan of action for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice at a meeting held prior to the fifteenth meeting of the Conference of the Parties.

Convention on Biological Diversity

BIODIVERSITY CONVENTION CARTAGENA PROT

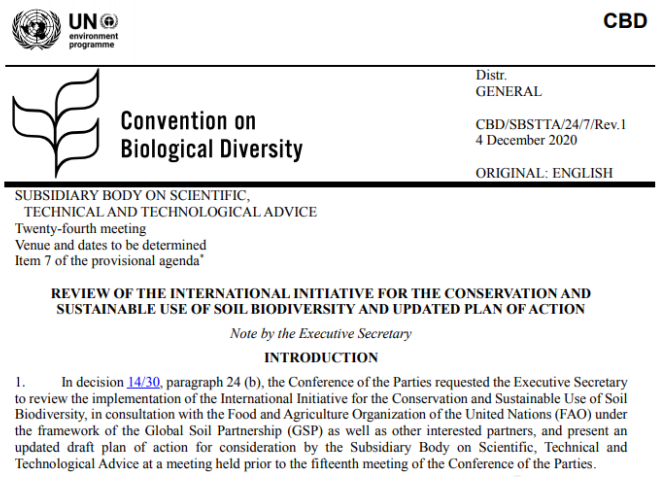
Preparations for the Post-2020 Biodiversity Framework

During the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity will adopt a post-2020 global biodiversity framework as a stepping stone towards the 2050 Vision of

Concrete steps

- Advocate and raise awareness on the importance of soil biodiversity;
- Prepare the **Outcome document** "Keep soil alive, protect soil biodiversity". We need to implement it together!
- Preparation of Proceedings GSOBI21!
- Execute the Implementation Plan "**International Initiative for the Conservation and Sustainable Use of Soil Biodiversity** ". Resource mobilization to enhance investment.
- Establishment of the **Global Soil Biodiversity Observatory** and its **Technical Network of Soil Biodiversity**.

Framework of implementation: a common objective “Keep soil alive protect soil biodiversity”



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How to execute and implement them?

Global Soil Biodiversity Observatory

Technical Network of Soil Biodiversity

we hope all of you will continue working with us!!

All ongoing initiatives and experts are welcome to join forces and work together for a common goal