



Food and Agriculture  
Organization of the  
United Nations

# Carolina Olivera

## Normative tools and global actions on sustainable soil management

# GLOBAL SOIL PARTNERSHIP

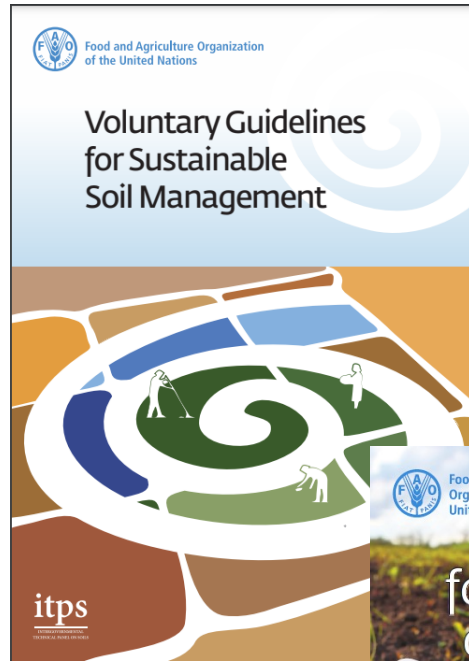
## 11<sup>th</sup> Plenary Assembly

12-14 July 2023



# Normative tools and global actions on sustainable soil management

- Compliance to the Voluntary Guidelines for Sustainable Soil Management (SSM) including the SSM Protocol
- Response to the Fertilizer Crisis via the International Code of Conduct for the Sustainable Use and Management of Fertilizers
- RECSOIL: recarbonization of agricultural soils
- Global Soil Doctors Programme



Endorsed: 155<sup>th</sup> Session  
of the FAO Council,  
December 2016



Endorsed 8th GSP Plenary  
Assembly ad hoc session,  
September 2020

# Compliance to the Voluntary Guidelines for Sustainable Soil Management (SSM) and SSM Protocol



# VGSSM and SSM protocol

The SSM protocol allows to **assess if any intervention implemented in the field is carried out in a sustainable manner**, according to the definition of SSM. The protocol provides **key indicators and a set of tools** to assess soil physical, chemical and biological properties.

- *Table 2. Evaluation of the compliance of sustainable soil management with the Voluntary Guidelines for Sustainable Soil Management (VGSSM) according to the trend displayed by the four recommended indicators¶*

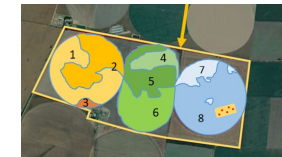
COMPLIANCE¶	Trend (compared to baseline or control)*¶
NO¶	One or more indicators show a worsening trend¶
LOW¶	All indicators maintain the same values¶
MEDIUM¶	No indicators worsening and one or two indicators improving¶
HIGH¶	No indicators worsening and more than two indicators improving¶

# VGSSM and SSM protocol

4 Soil indicators (Productivity, Soil Organic Carbon, Bulk density and Soil Respiration rate)



1. Description of the implementation area
2. Soil samples collection and visual soil assessment
3. Soil laboratory analysis with armonized methodologies
4. Interpretation of data and evaluation of compliance



COMPLIANCE	Trend (compared to baseline or control)*R
NO: (Red)	One or more indicators show a worsening trend.
LOW: (Yellow)	All indicators maintain the same values.
MEDIUM: (Light Green)	No indicators worsening and one or two indicators improving.
HIGH: (Dark Green)	No indicators worsening and more than two indicators improving.

# Scope of the SSM protocol

- Impact of practices on soils,
- Impact of projects on soils,
- Mainstreaming of SSM practices,
- Land degradation neutrality, LDN
- Nationally determined contributions, NDCs



# Soil governance and SoiLEX

- The SoiLEX platform is regularly updated
- Special issue on the ELSEVIER's Soil Security journal
- Webinar: Enhancing soil governance
- Technical guide: Addressing gender equality in sustainable soil management
- Legal guide on sustainable soil management under development



Soil Security  
Volume 5, December 2021, 100021



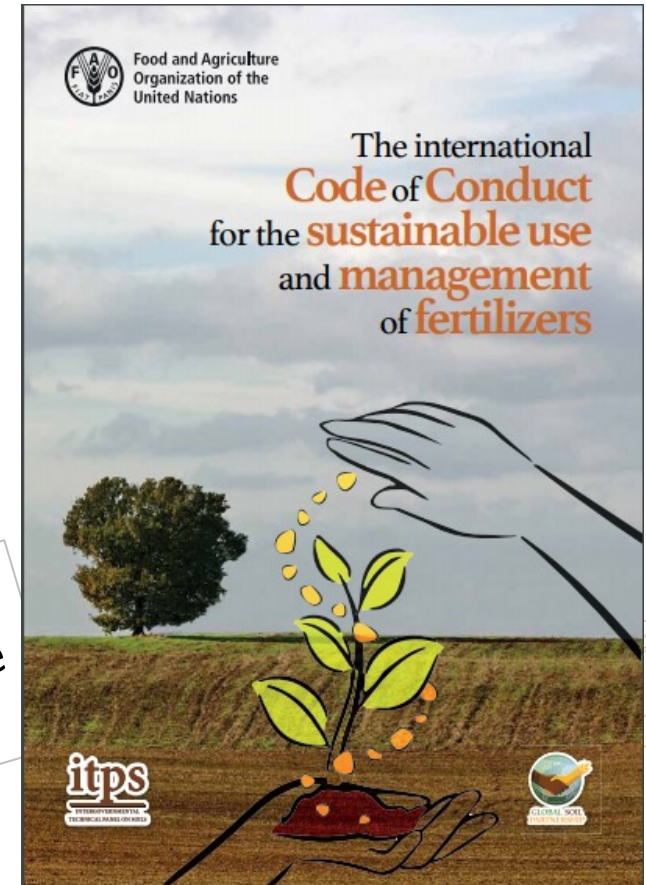
Advancing soil governance for  
sustainable development

[Lifeng Li](#)<sup>a</sup>, [Dirk Messner](#)<sup>b</sup>



# The international Code of Conduct for the sustainable use and management of fertilizers

Endorsed: 41st Session of the FAO Conference, June 2019



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# The Secretariat's response to the fertilizer crisis



- Soil nutrient mapping
- Fertilizer quality assessment
- Development of local fertilizer recommendations
- Nutrient use efficiency
- Capacity development of extension officers, farmers and agrodealers,
- Alternative soil nutrient sources including biofertilizers, biostimulants and other sources.

# National Survey on the Use and Management of Fertilizers



**150 participants from  
61 countries**

Disaggregated by gender, sector, country, and region, to better understand fertilizer use and management and the gaps and challenges for their sustainable use.



**5 thematic areas**

1. Fertilizer assessment
2. Research
3. Capacity building,
4. Awareness raising
5. Regulation frameworks.



Need to develop a roadmap towards the sustainable use of fertilizers at national and regional levels.



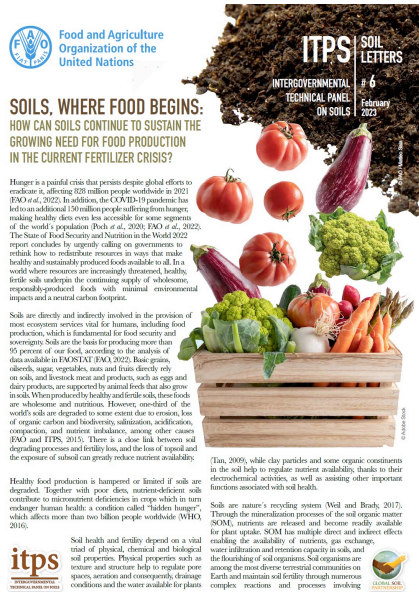
# 2022 - Soils: Where food begins

Global Symposium on Soils for Nutrition, held in July 2022 over 9 500 registered participants from 180 countries

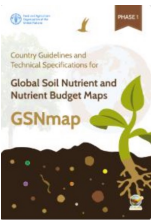
ITPS letter: how can soils continue to sustain the growing need for food production in the current fertilizer crisis?

World Soil Day 2022 Soils: Where food begins 2 200 events pinned on the official WSD map. reached 145 million users

International Network on Soil Fertility and Fertilizers (INSOILFER)



1 Soil nutrient monitoring system



2 Sustainable management of soil nutrients and fertilization practices

3 Reducing the impacts of soil nutrient management

4 Fertilizer safety and quality assessment



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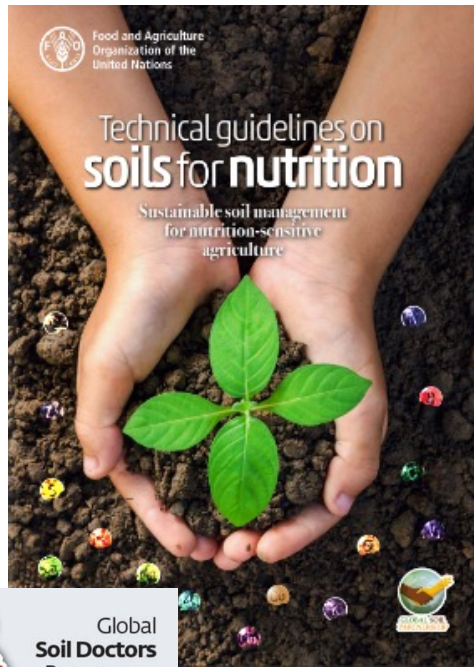
Thanks to the financial support of



# Soils4Nutrition



## Sustainable soil management for nutrition-sensitive agriculture in sub-Saharan Africa and Southeast Asia



A bottom-up approach:  
Technical guidelines on S4N

### Technical recommendations

Normative and technical support



Literature review and GS4N symposium



Field trials and demonstration sites



BURKINA FASO

MALAWI

BANGLADESH

# Capacity Development on Sustainable Fertility Management in Uganda and Rwanda



Purchase soil laboratory equipment



Soil samples collection and analysis



Fertilizer quality assessment



Field experiments and demonstrations of fertilizer use

**Soil Information and Data**

EduSoils

Pillar 4 - Soil information & data: Capacity development programs in numbers

- 570+ Participants
- 120+ Countries
- 35+ Sessions

EduSoils | e-learning soil educational

Course on Digital Soil Mapping and Modelling



Training session on Soil Testing and Fertilizer Recommendations

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# SOILFER: Soil mapping for resilient agri-food systems in Central America and sub-Saharan Africa



**Honduras**



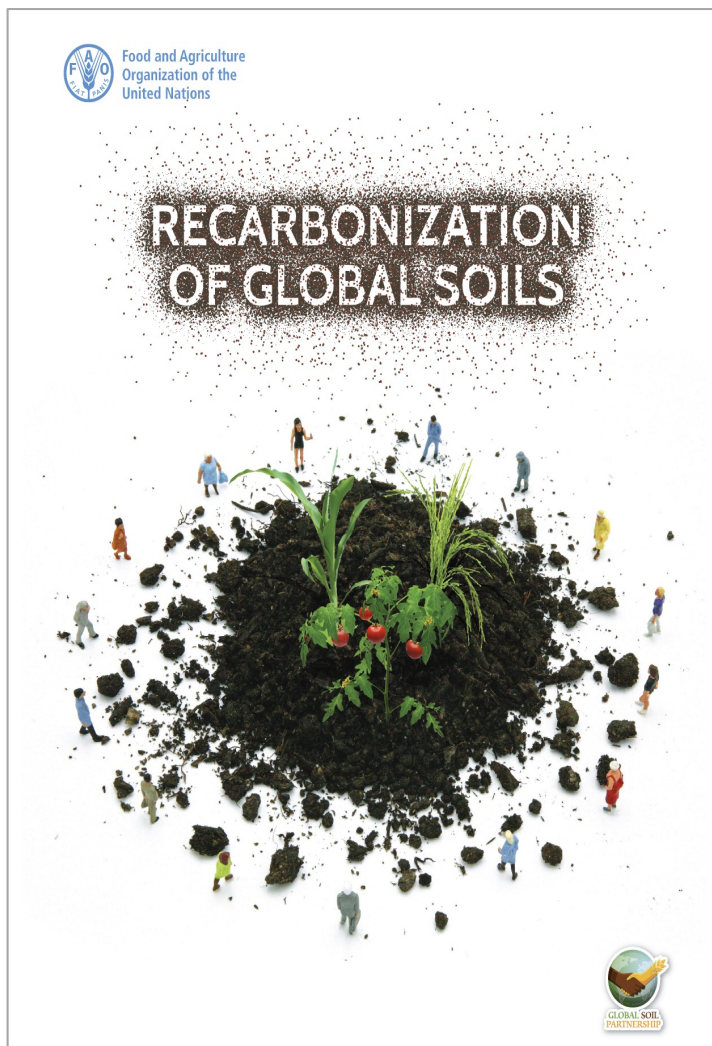
**Guatemala**



**Zambia**

- FAO and several other institutions in Guatemala, Honduras and Zambia are working together to promote and restore the health and fertility of agricultural soils, and to support farmers in coping with the fertilizer crisis and the onslaught of global climate change.
- This project started its activities in May 2023 and has the potential for scaling-up in other countries and regions.





# REC SOIL: recarbonization of agricultural soils

Launched on 17  
June 2020

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# RECISOIL – Green Path

## Implementation steps



## Stakeholders and responsibilities





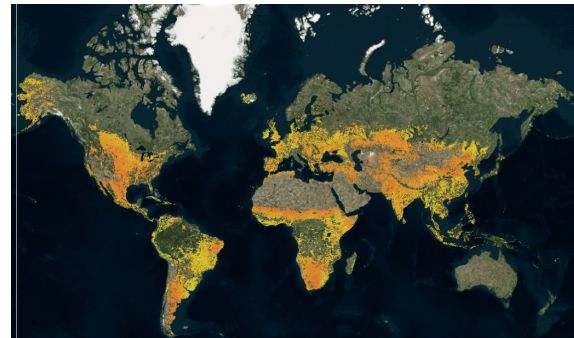
# REC SOIL toolkit

## Technical feasibility

Country-driven global data products

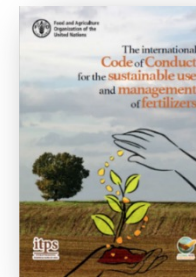
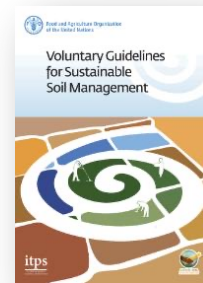


GSOCmap



GSOCseq

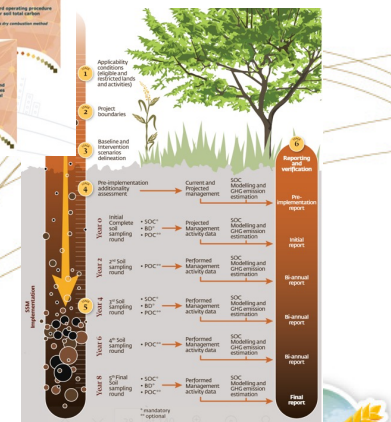
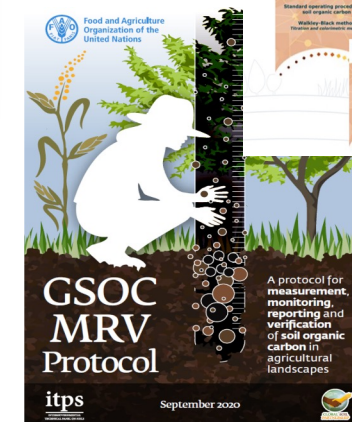
## Technical Training and Capacity Building



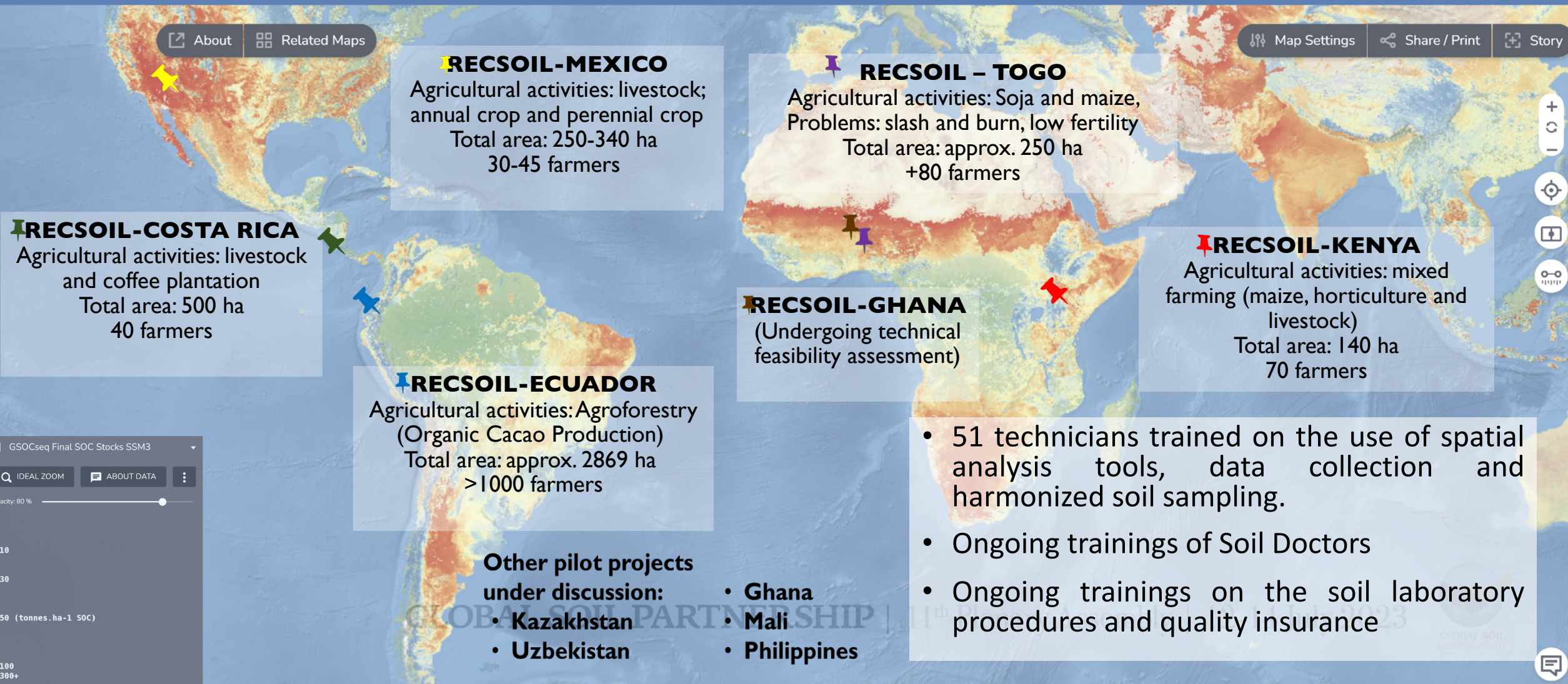
## MRV Protocols



Indicator	Parameter/ metric
Soil productivity	Agricultural productivity or biomass in dry matter (t ha <sup>-1</sup> year <sup>-1</sup> )
Soil organic carbon	Organic carbon (%)
	Soil physical properties
Soil biological activity	Soil respiration rate (gCO <sub>2</sub> m <sup>-2</sup> d <sup>-1</sup> )
	Ideally combined with at least one other biological indicator (See soil biological activity p. 4 and 5)



# RECISOIL – Green Path / Piloting countries



# Global Soil Doctors Programme



Launched in  
October 2020

**Soil Doctors**  
GLOBAL PROGRAMME  
GLOBAL SOIL PARTNERSHIP

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# Global Soil Doctors Programme



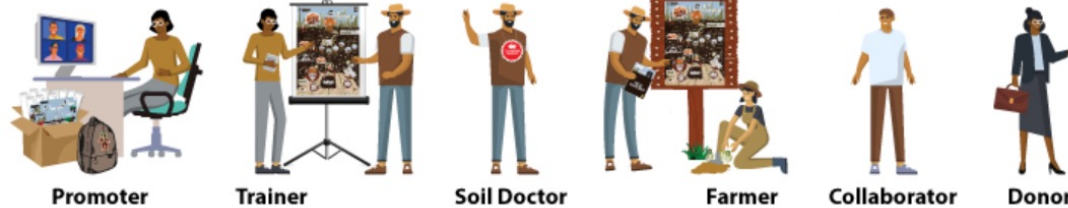
中文 English Français Español



- About the Programme
- How to get involved
- Educational material
- Implementation steps
- Implementation sites
- Publications and events

## How to get involved

Anyone can join the Global Soil Doctors Programme and contribute to the selection and training of Soil Doctors across the world. Members of extension services, the private sector, farmer associations, academia, soil science societies, as well as independent actors, can be actively involved in the capacity-building process. Moreover, the Programme can benefit from the contribution of any actor who would like to share training materials, tutorials, local knowledge and field experiences through this website.



- ✓ New interactive website in 4 languages
- ✓ Registration formats
- ✓ Educational material available
- ✓ Implementation sites updated

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# Global Soil Doctors Programme

## Training modules

What is soil

What are salinity/sodicity

Soils for nutrition

Recarbonization of soils

Soil fertility

### Posters in official UN languages and local languages



#### Why are your crops not growing well?

Healthy soils are crucial for ensuring the continued growth of crops.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages: Dioula | Fulah | Kazakh | Mossi



#### What is soil?

Soils are complex mixtures of minerals, water, air, organic matter, and countless organisms that together support life on Earth.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages: Chichewa; Chewa; Nyanja | Dioula | Fulah | Kazakh | Mossi | Tumbuka | Bengali

### Field exercises and educational kit

BIOLOGICAL PROPERTIES



CHEMICAL PROPERTIES



PHYSICAL PROPERTIES



BIOLOGICAL PROPERTIES



#### Roots Observation

The Global Soil Doctors Programme's Field Exercises developed by the Global Soil Partnership.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages:

+ Video tutorials



### Visual soil assessment and SSM recommendations

Properties	Soil	Soil Health		
		POOR	MODERATE	GOOD
Structure	Structure			
Water infiltration	Water infiltration			
Soil color	Soil color			
Soil texture	Soil texture			
Soil pH	Soil pH			
Soil temperature	Soil temperature			
Soil moisture	Soil moisture			
Soil organic matter	Soil organic matter			
Soil nutrients	Soil nutrients			
Soil salinity	Soil salinity			
Soil erosion	Soil erosion			
Soil compaction	Soil compaction			
Soil biodiversity	Soil biodiversity			
Soil carbon	Soil carbon			



#### How to prevent and remediate soil compaction?

This poster explains how to prevent and remediate soil compaction.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages: Dioula | Fulah | Kazakh | Mossi



#### How to best minimize soil erosion by water?

This poster explains how to minimize soil erosion by water.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages: Dioula | Fulah | Kazakh | Mossi

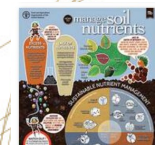


#### How to enhance soil organic matter content?

This poster explains how to enhance soil organic matter content.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages: Dioula | Fulah | Bengali | Kazakh | Mossi



#### How to manage soil nutrients?

This poster explains how to manage soil nutrients.

Official languages: English | French | Spanish | Chinese | Russian | Arabic

Other languages: Bengali | Chichewa; Chewa; Nyanja (Temp unavailable) | Dioula | Fulah | Mossi | Tumbuka |

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# Global Soil Doctors Programme



## Implementation sites

Africa

Asia

Europe

Latin America and the Caribbean

Near East and North Africa

North America

Pacific

## BURKINA FASO



### PROMOTING INSTITUTION:

Bureau National des Sols - **BUNASOLS**

### TRAININGS:

★ Koubri, Manga and Fulfulde translations by

## MEXICO



### PROMOTING INSTITUTION:

Programa Universitario de Estudios Interdisciplinarios del Suelo (PUEIS) de la UNAM.

### TRAININGS:

★ Michoacán, Puebla, Sinaloa, Tlaxcala, Veracruz and Ciudad de México | Module 1 - What is soil in collaboration with Secretariat of Agriculture and Rural Development (SADER) | Spanish | November 2021-December 2022 | Photogallery | Highlight

✓ 110 trainers and 403 soil doctors have been trained.

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# Actions for the Plenary Assembly

- Express appreciation for the efforts made in the implementation of the VGSSM and **invite members to adopt the VGSSM and use its SSM Protocol** to assess if a given soil management practice complies with the definition and principles of SSM;
- Acknowledge the **progress made in the implementation of the Fertilizer Code** through several projects and through the Global Symposium on Soils for Nutrition;
- Invite countries and partners to **adopt the Fertilizer Code and to support its implementation** at the national level to address the fertilizer crisis;
- **Acknowledge the efforts made in raising public awareness on soil governance**, especially through the SoiLEX platform;
- Acknowledge the progress made in the development and scaling up of RECSOIL implementation worldwide and **invite resource partners to provide financing to advance it on the ground**;
- Acknowledge the development and implementation of the Global Soil Doctors Programme and its positive impact on the awareness of farmers and extension technicians on sustainable soil management; and
- Invite members and partners to **promote the Global Soil Doctors Programme and to contribute financial and in-kind resources for its implementation**, to ensure the sustainability and scaling-up of the programme.



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