Food and Agriculture Organization of the United Nations

16th Working Session of the Intergovernmental Technical Panel on Soils (ITPS)

Item 8
Global Soil Doctors Programme

SILVIA PIOLI (FAO/GSP)

itps
INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS

28, 29 and 30 March 2022 | Virtual meeting

GLOBAL SOIL PARTNERSHIP

What is it?

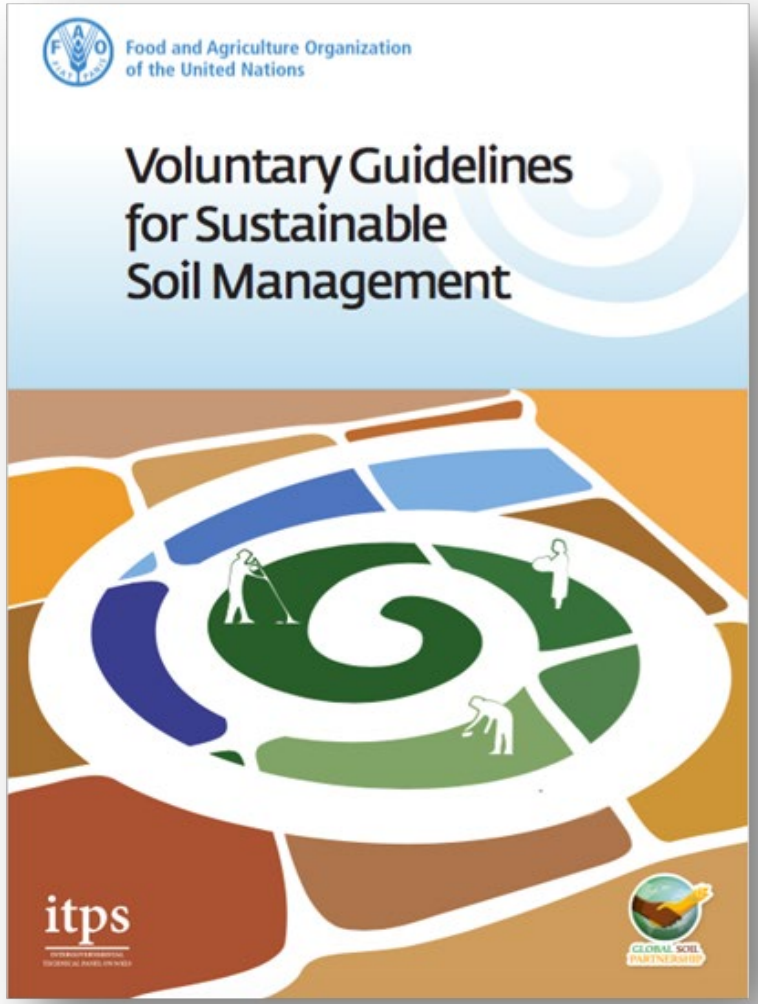
- Farmer-to-farmer training programme

Aim

- Building the capacity of farmers on soils and sustainable soil management;

Perspectives

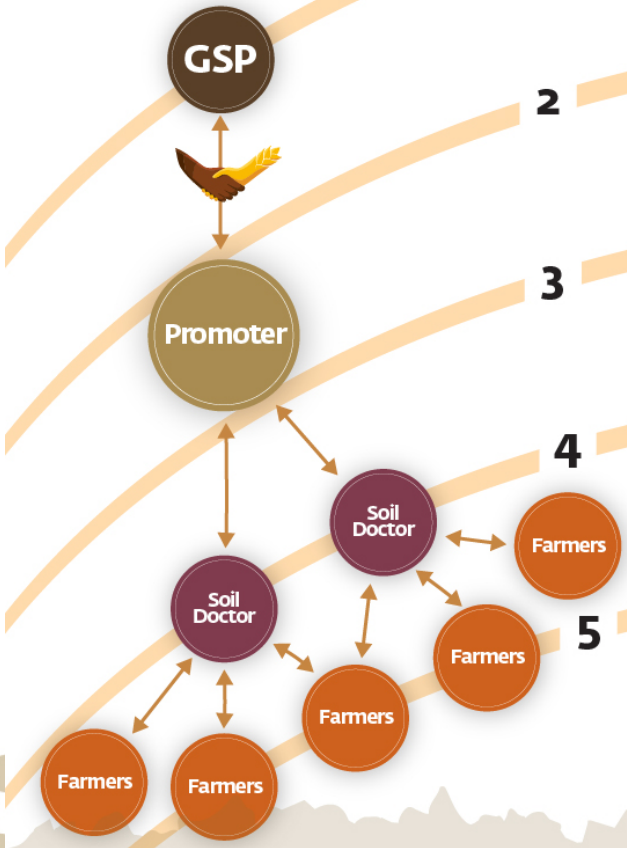
- To support a self-sufficient system that will promote good practices on sustainable soil management and optimize available national resources



INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS

GLOBAL SOIL PARTNERSHIP

Actors



Roadmap

1. The Global Soil Partnership and the Promoter agree on the **implementation plan**
2. The Global Soil Partnership **trains** the **Promoter**

3. The Promoter **identifies farmer groups** and selects **potential Soil Doctors**

4. **Training of the Soil Doctor** by the Promoter

5. **Training of the Farmers** by the Soil Doctor

Global **Soil Doctors** Programme

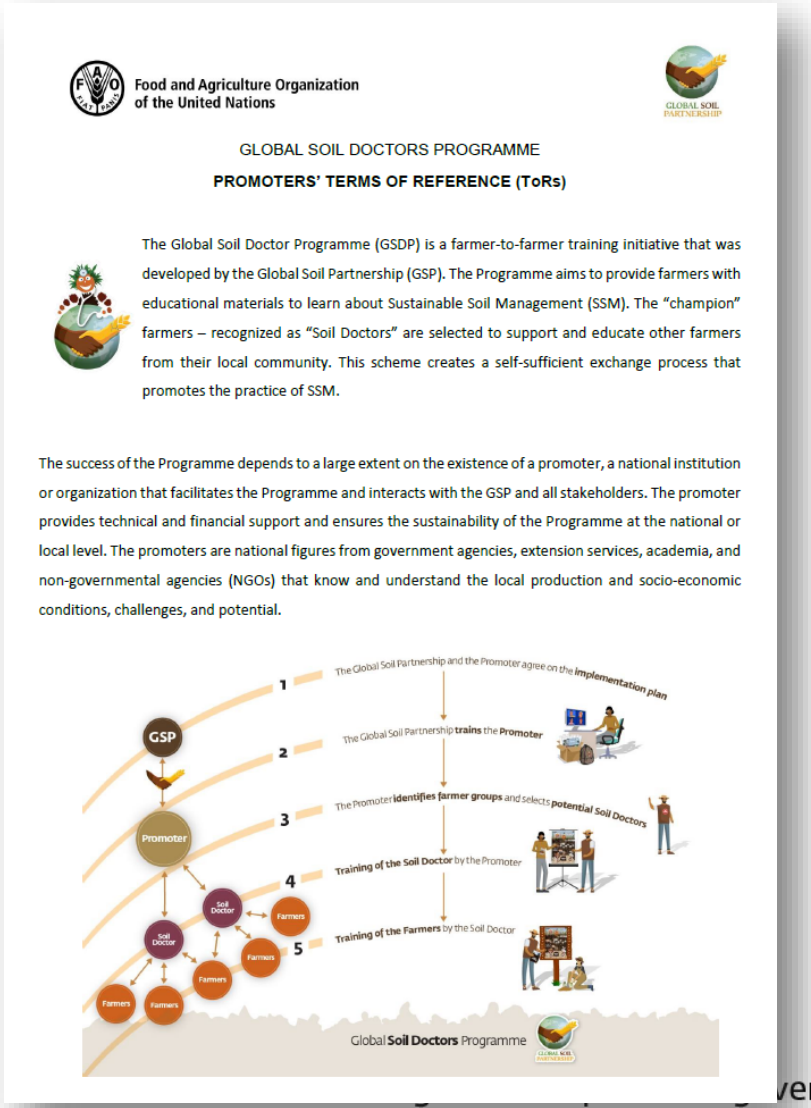
First step: find the promoting institution

- **Terms of reference**

  List of criteria for the promoter selection, roles and benefits

- **Registration form**

  Formalization of the voluntary collaboration between GSP and the promoter



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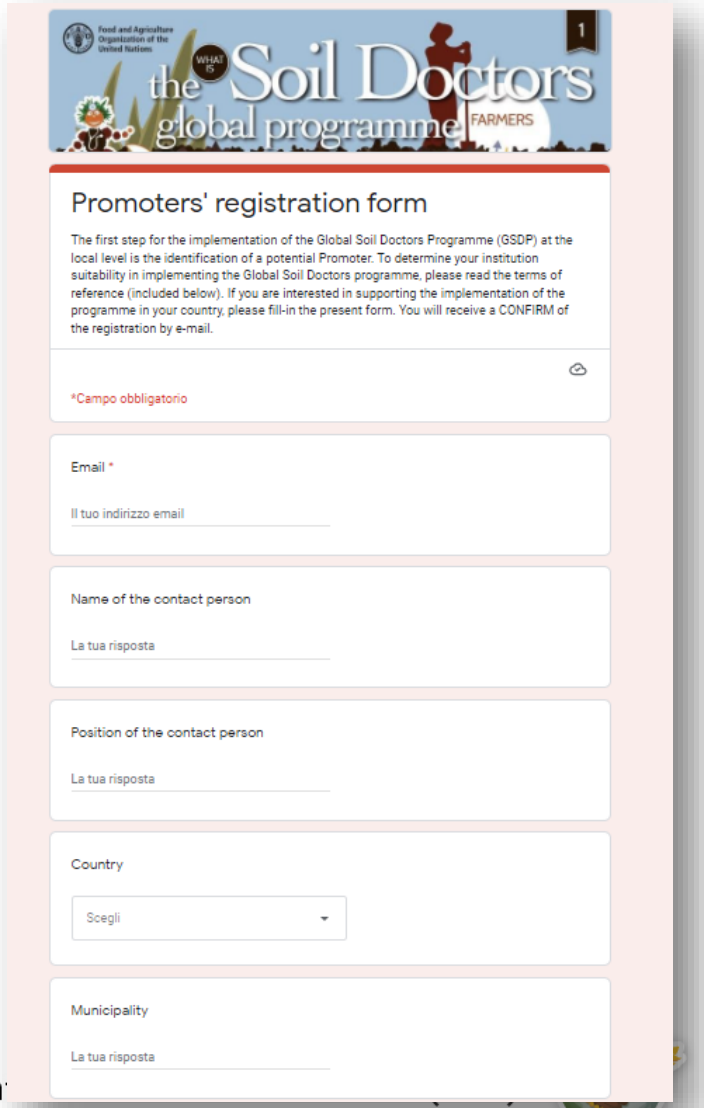
GLOBAL SOIL DOCTORS PROGRAMME

PROMOTERS' TERMS OF REFERENCE (ToRs)

The Global Soil Doctor Programme (GSDP) is a farmer-to-farmer training initiative that was developed by the Global Soil Partnership (GSP). The Programme aims to provide farmers with educational materials to learn about Sustainable Soil Management (SSM). The "champion" farmers – recognized as "Soil Doctors" are selected to support and educate other farmers from their local community. This scheme creates a self-sufficient exchange process that promotes the practice of SSM.

The success of the Programme depends to a large extent on the existence of a promoter, a national institution or organization that facilitates the Programme and interacts with the GSP and all stakeholders. The promoter provides technical and financial support and ensures the sustainability of the Programme at the national or local level. The promoters are national figures from government agencies, extension services, academia, and non-governmental agencies (NGOs) that know and understand the local production and socio-economic conditions, challenges, and potential.



the Soil Doctors global programme FARMERS

Promoters' registration form

The first step for the implementation of the Global Soil Doctors Programme (GSDP) at the local level is the identification of a potential Promoter. To determine your institution suitability in implementing the Global Soil Doctors programme, please read the terms of reference (included below). If you are interested in supporting the implementation of the programme in your country, please fill-in the present form. You will receive a CONFIRM of the registration by e-mail.

*Campo obbligatorio

Email *

Il tuo indirizzo email

Name of the contact person

La tua risposta

Position of the contact person

La tua risposta

Country

Scegli

Municipality

La tua risposta

Posters' overview

How to prevent soil pollution on agricultural fields?

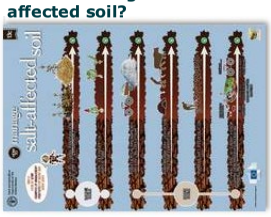
What is soil biodiversity?

How to enhance soil biodiversity?

What are saline and sodic soils?

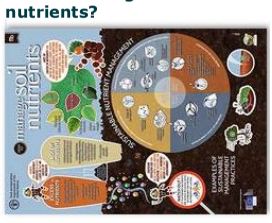
How to prevent soil salinization and sodification?

How to manage salt-affected soil?

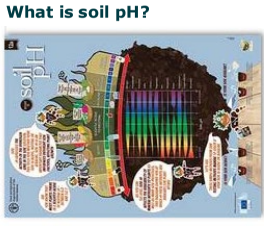


What is soil pollution?

How to manage soil nutrients?



What is soil pH?



What is soil acidification?

How to minimize soil acidification?

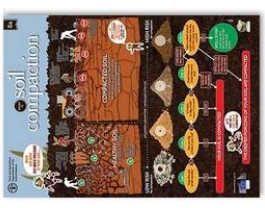
How to minimize soil erosion by wind?

What is soil organic matter?

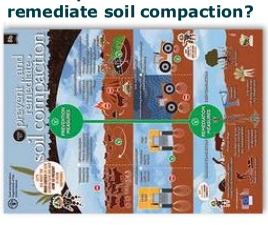
How to enhance soil organic matter content?

What are soil nutrients?

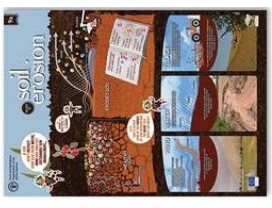
What is soil compaction?



How to prevent and remediate soil compaction?



What is soil erosion?



How to minimize soil erosion by water?

How to take a soil sample

How to best manage your soil

What are the physical soil properties?

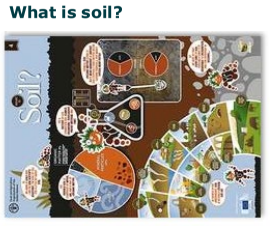
What are the biological and chemical soil properties?

What is the Global Soil Doctors programme?

How to become a Soil Doctor?

Why are your crops not growing well?

What is soil?



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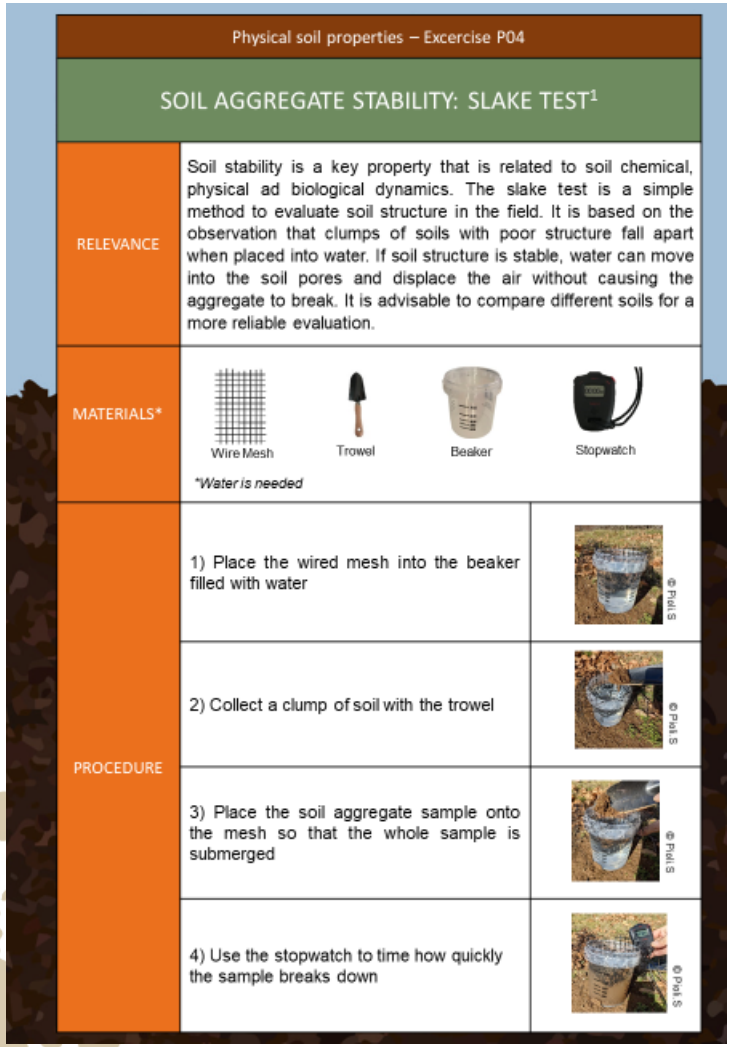
Soil educational kit

Soil Kit - Standard version (qualitative assessment)	
Type	**Feature**
Physical properties	Texture
	Organic matter*
	Soil structure
	Aggregate stability
Chemical properties	Soil pH
	Carbonates
Biological properties	Litter decomposition
	Invertebrates
	Roots status*

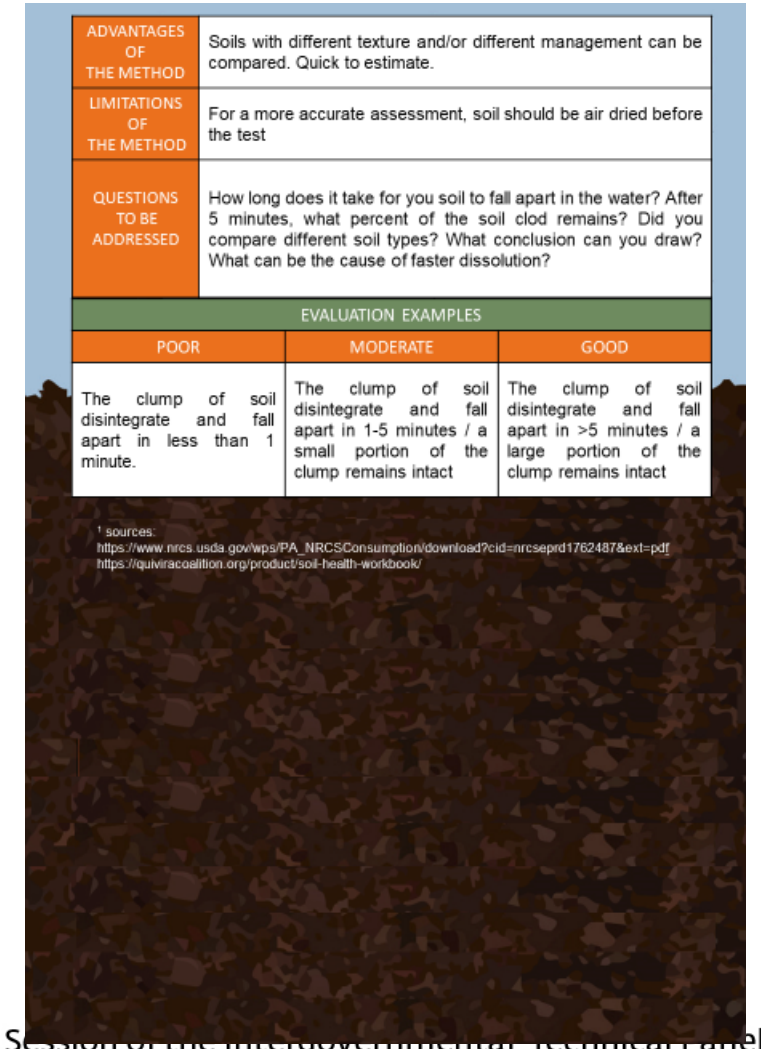
Soil educational kits

Field exercises



Physical soil properties – Excercise P04	
SOIL AGGREGATE STABILITY: SLAKE TEST[1]	
RELEVANCE	Soil stability is a key property that is related to soil chemical, physical ad biological dynamics. The slake test is a simple method to evaluate soil structure in the field. It is based on the observation that clumps of soils with poor structure fall apart when placed into water. If soil structure is stable, water can move into the soil pores and displace the air without causing the aggregate to break. It is advisable to compare different soils for a more reliable evaluation.
MATERIALS*	Wire Mesh, Trowel, Beaker, Stopwatch *Water is needed
PROCEDURE	1) Place the wired mesh into the beaker filled with water
	2) Collect a clump of soil with the trowel
	3) Place the soil aggregate sample onto the mesh so that the whole sample is submerged
	4) Use the stopwatch to time how quickly the sample breaks down

Front



ADVANTAGES OF THE METHOD	Soils with different texture and/or different management can be compared. Quick to estimate.
LIMITATIONS OF THE METHOD	For a more accurate assessment, soil should be air dried before the test
QUESTIONS TO BE ADDRESSED	How long does it take for you soil to fall apart in the water? After 5 minutes, what percent of the soil clod remains? Did you compare different soil types? What conclusion can you draw? What can be the cause of faster dissolution?

EVALUATION EXAMPLES		
POOR	MODERATE	GOOD
The clump of soil disintegrate and fall apart in less than 1 minute.	The clump of soil disintegrate and fall apart in 1-5 minutes / a small portion of the clump remains intact	The clump of soil disintegrate and fall apart in >5 minutes / a large portion of the clump remains intact

[1] sources:
https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcseprd1762487&ext=pdf
https://quiviracoalition.org/product/soil-health-workbook/

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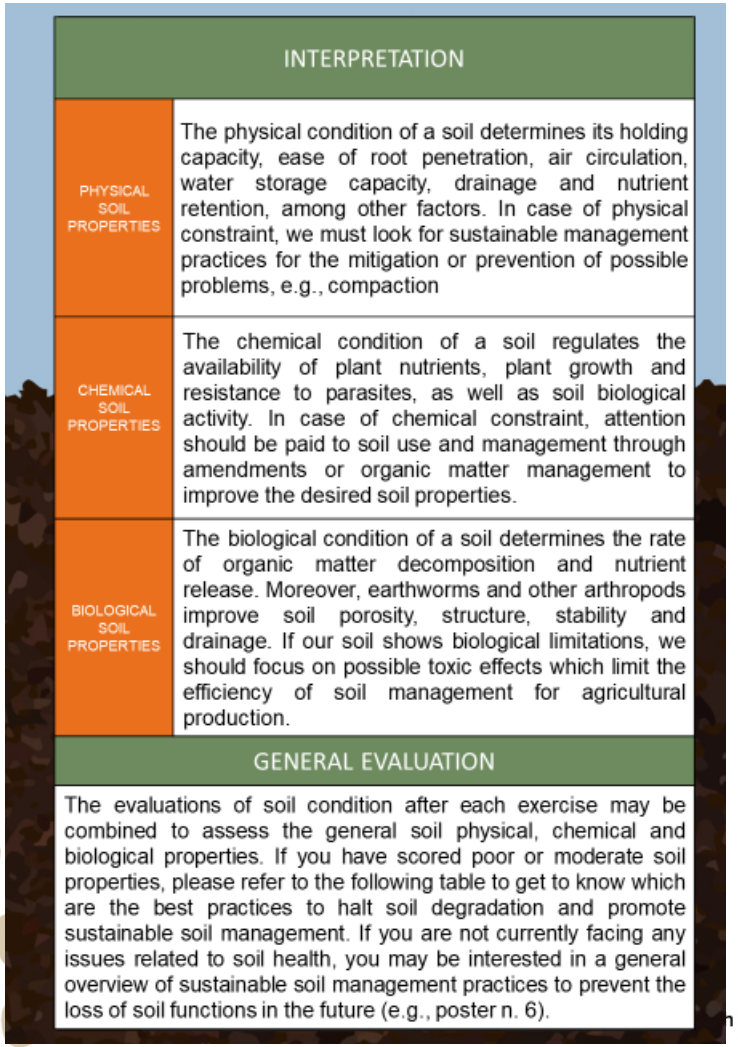
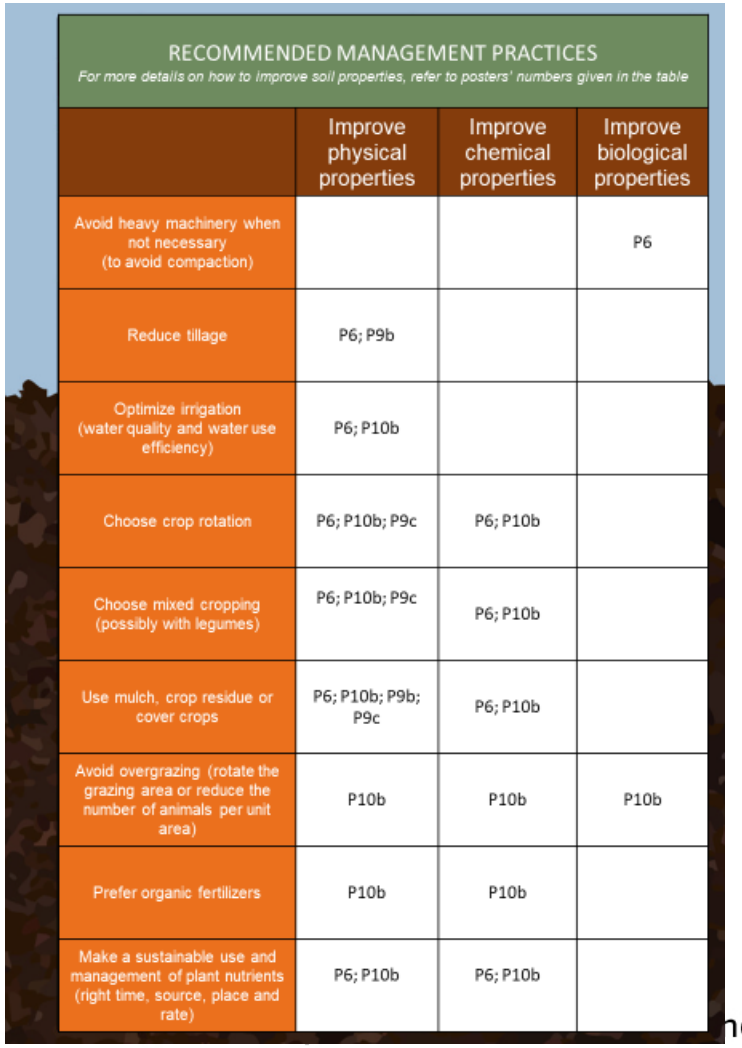
Evaluation of soil conditions and recommendations



INTERPRETATION	
PHYSICAL SOIL PROPERTIES	The physical condition of a soil determines its holding capacity, ease of root penetration, air circulation, water storage capacity, drainage and nutrient retention, among other factors. In case of physical constraint, we must look for sustainable management practices for the mitigation or prevention of possible problems, e.g., compaction
CHEMICAL SOIL PROPERTIES	The chemical condition of a soil regulates the availability of plant nutrients, plant growth and resistance to parasites, as well as soil biological activity. In case of chemical constraint, attention should be paid to soil use and management through amendments or organic matter management to improve the desired soil properties.
BIOLOGICAL SOIL PROPERTIES	The biological condition of a soil determines the rate of organic matter decomposition and nutrient release. Moreover, earthworms and other arthropods improve soil porosity, structure, stability and drainage. If our soil shows biological limitations, we should focus on possible toxic effects which limit the efficiency of soil management for agricultural production.

GENERAL EVALUATION

The evaluations of soil condition after each exercise may be combined to assess the general soil physical, chemical and biological properties. If you have scored poor or moderate soil properties, please refer to the following table to get to know which are the best practices to halt soil degradation and promote sustainable soil management. If you are not currently facing any issues related to soil health, you may be interested in a general overview of sustainable soil management practices to prevent the loss of soil functions in the future (e.g., poster n. 6).



RECOMMENDED MANAGEMENT PRACTICES

For more details on how to improve soil properties, refer to posters' numbers given in the table

	Improve physical properties	Improve chemical properties	Improve biological properties
Avoid heavy machinery when not necessary (to avoid compaction)			P6
Reduce tillage	P6; P9b		
Optimize irrigation (water quality and water use efficiency)	P6; P10b		
Choose crop rotation	P6; P10b; P9c	P6; P10b	
Choose mixed cropping (possibly with legumes)	P6; P10b; P9c	P6; P10b	
Use mulch, crop residue or cover crops	P6; P10b; P9b; P9c	P6; P10b	
Avoid overgrazing (rotate the grazing area or reduce the number of animals per unit area)	P10b	P10b	P10b
Prefer organic fertilizers	P10b	P10b	
Make a sustainable use and management of plant nutrients (right time, source, place and rate)	P6; P10b	P6; P10b	

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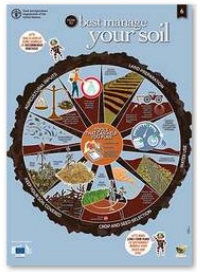
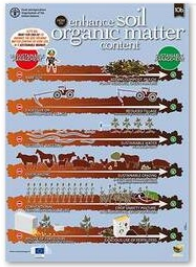
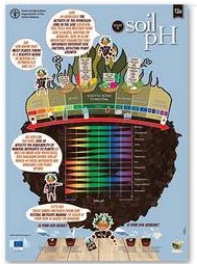
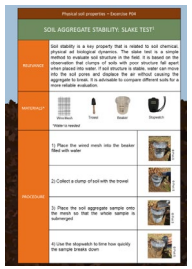
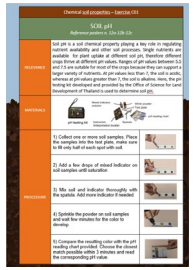
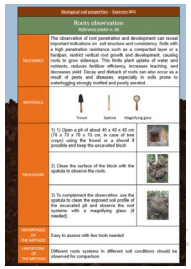
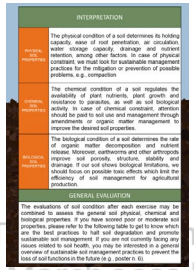
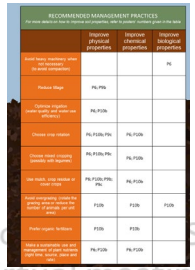
Modules

Topic	Specific soil topic (e.g general soil properties, nutrients, salinity)
Posters	4 posters to be chosen among those available
Field exercises	3- 4 field exercises related to the topic including physical, chemical, biological observations
Evaluation	Final evaluation of soil condition and recommendations

Example: Module 1

Topic	What is soil?		
Posters	 What is soil?  How to best manage your soil  How to enhance soil organic matter content?  What is soil pH?	**Evaluation**	
Field exercises	 Aggregate stability  Soil pH  Roots		 

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Visual identity

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Implementation activities: Overview

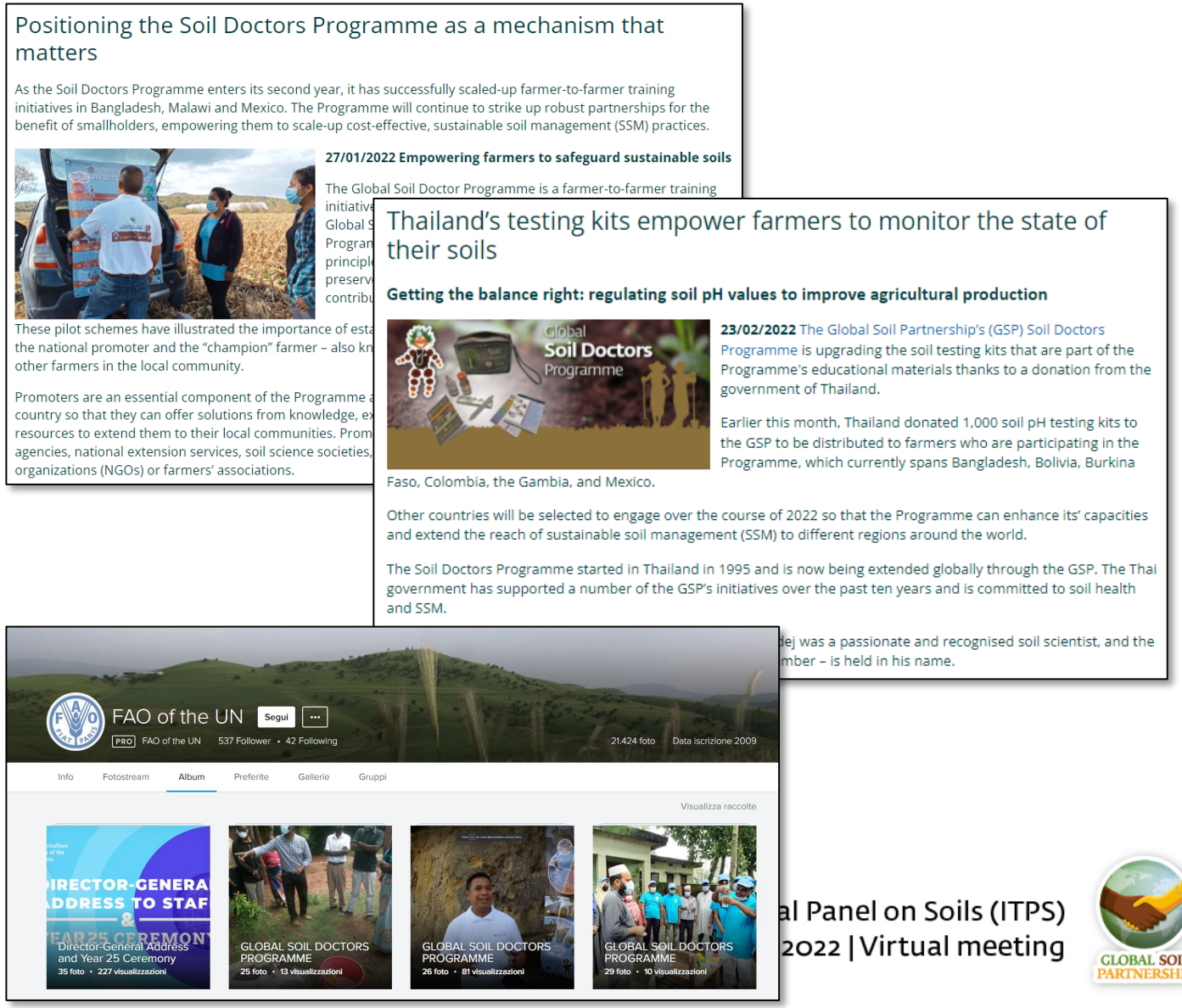
Country	Promoter	Topic	Trainers	Farmers	Soil Doctors
Bangladesh	SRDI - DAE	Soils4nutrition	10	450	15
Bolivia	AOPEB - ELSEIBO	Fertilization	26	TBD	50
Burkina Faso	TBD	Soils4nutrition	TBD	TBD	TBD
Chile	TBD	TBD	TBD	TBD	TBD
Colombia	AGROSAVIA	General	TBD	TBD	TBD
Gambia	FAO Gambia – SOIL SOL	General	15	TBD	150
Kazakhstan	Farmers association	Salinity	10	200 to 300	50
Malawi	TBD	Soils4nutrition	TBD	500 to 800	TBD
Mexico	PUEIS	General	32	400 to 600	TBD
Morocco	TBD	TBD	TBD	TBD	TBD
Thailand (Lancang-Mekong)	TBD	TBD	TBD	TBD	TBD
The Philippines	TBD	TBD	TBD	TBD	TBD

Communication and visibility

- New website to be released

Communication and visibility

- Highlights published



- Media gallery updated regularly

Expected collaboration

- Poster revision and development

- Field exercises revision and development

Pictures from the training

Botswana

Malawi

Mexico

Bangladesh

https://www.flickr.com/photos/faooftheun/albums/with/72177720296280200

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Thank you !

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