



Food and Agriculture  
Organization of the  
United Nations

# 16<sup>th</sup> 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



# What is it?

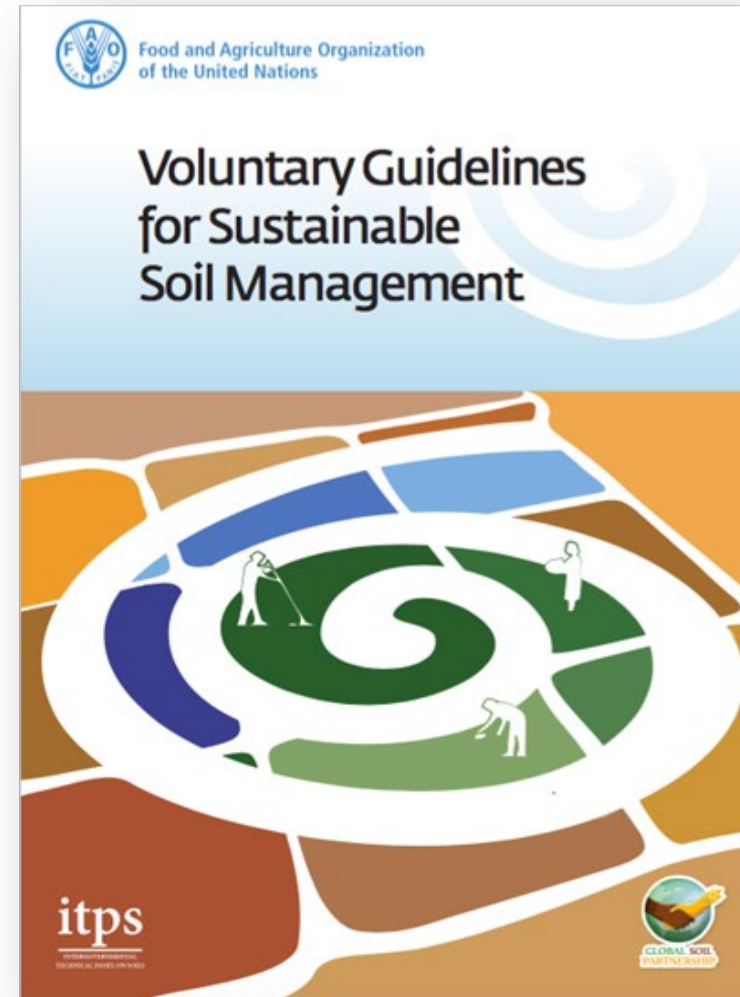
- Farmer-to-farmer training programme

## 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

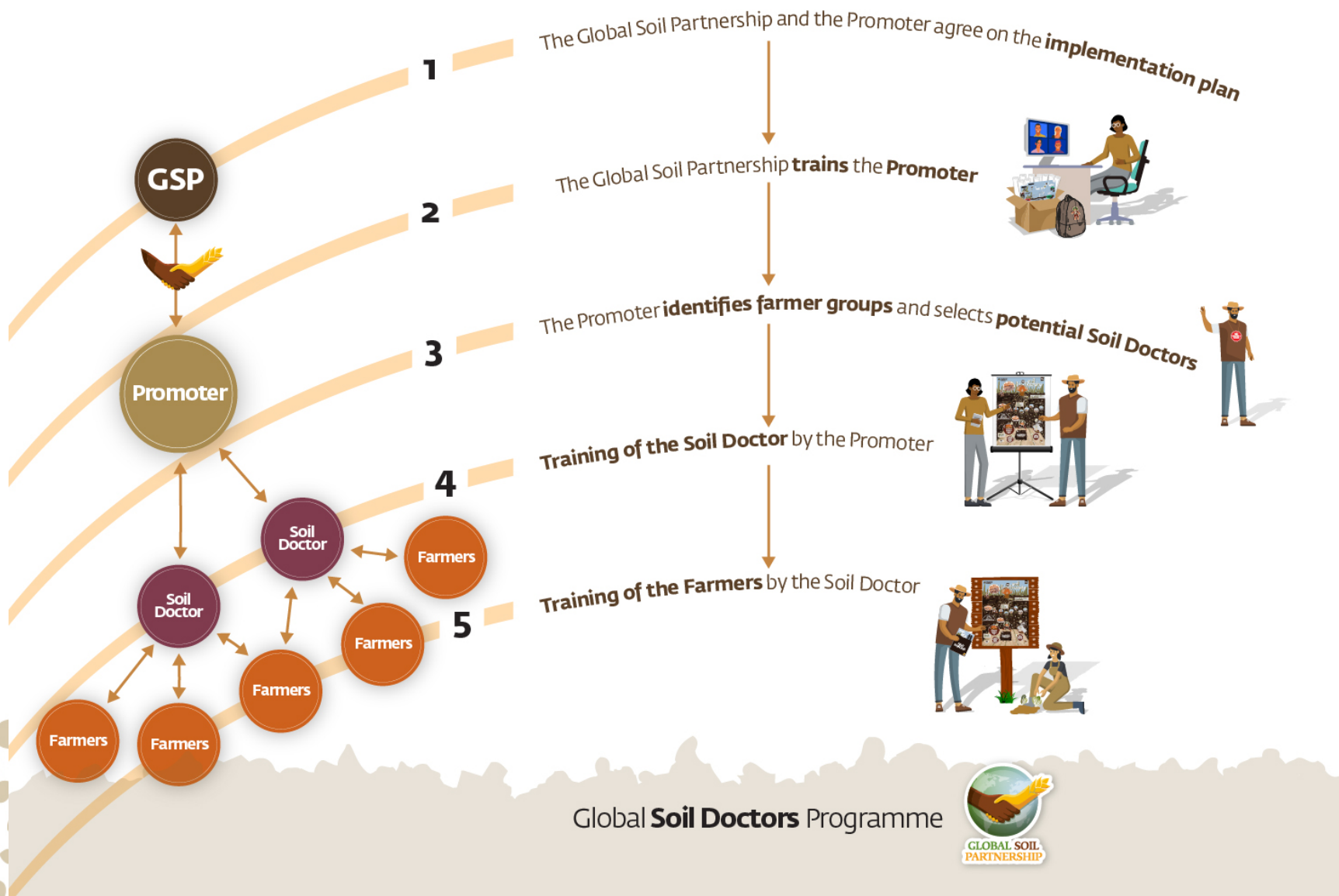


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# Actors

# Roadmap



# 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

The document cover features the FAO logo and the Global Soil Partnership logo. The title is 'GLOBAL SOIL DOCTORS PROGRAMME PROMOTERS' TERMS OF REFERENCE (ToRs)'. A small illustration shows a farmer holding a globe. The text describes the GSDP as a farmer-to-farmer training initiative developed by the GSP, aiming to provide farmers with educational materials on Sustainable Soil Management (SSM). 'Champion' farmers, known as 'Soil Doctors', are selected to support and educate other farmers in their local community. The 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 flowchart illustrates the implementation process in five steps:

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.

The diagram shows a flow from GSP to Promoter, then to Soil Doctor, and finally to Farmers. The Global Soil Doctors Programme logo is at the bottom.

The screenshot shows the 'Promoters' registration form' for the 'the Soil Doctors global programme'. The form includes the following fields:

- \*Campo obbligatorio
- Email \*
- Name of the contact person
- Position of the contact person
- Country (dropdown menu)
- Municipality

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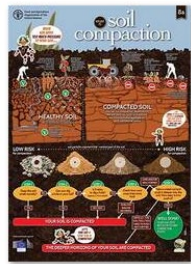
# Posters' overview



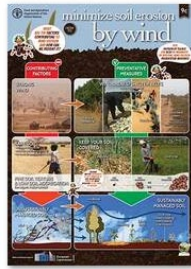
What is the Global Soil Doctors Programme?



How to take a soil sample



What is soil compaction?



How to minimize soil erosion by wind?



How to manage soil nutrients?



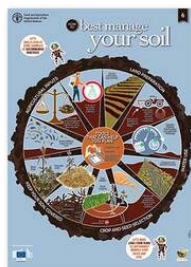
What are saline and sodic soils?



How to prevent soil pollution on agricultural fields?



How to become a Soil Doctor?



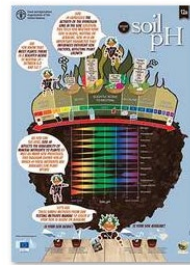
How to best manage your soil



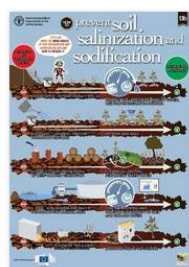
How to prevent and remediate soil compaction?



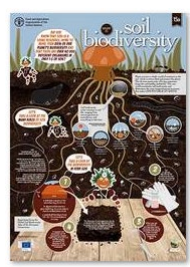
What is soil organic matter?



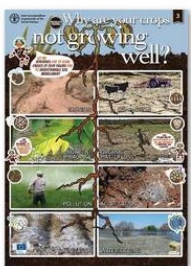
What is soil pH?



How to prevent soil salinization and sodification?



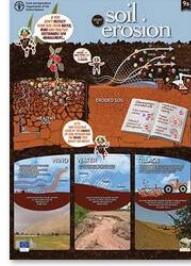
What is soil biodiversity?



Why are your crops not growing well?



What are the physical soil properties?



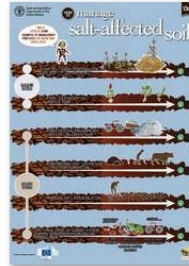
What is soil erosion?



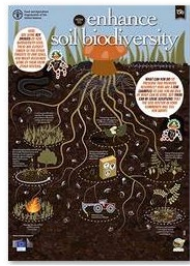
How to enhance soil organic matter content?



What is soil acidification?



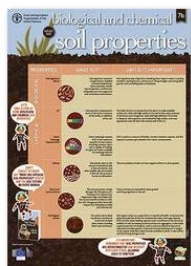
How to manage salt-affected soil?



How to enhance soil biodiversity?



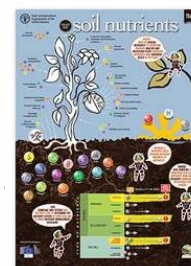
What is soil?



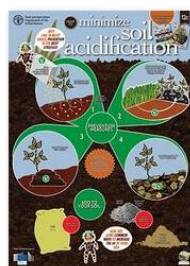
What are the biological and chemical soil properties?



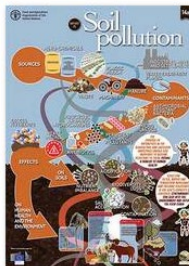
How to minimize soil erosion by water?



What are soil nutrients?



How to minimize soil acidification?



What is soil pollution?



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# Soil educational kit

Soil Kit - Standard version ( <a href="#">qualitative assessment</a> )	
Type	Feature
Physical properties	Texture
	Organic matter*
	Soil structure
	Aggregate stability
Chemical properties	Soil pH
	Carbonates
Biological properties	Litter decomposition
	Invertebrates
	Roots status*









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# Soil educational kits



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# Field exercises

Physical soil properties – Exercise P04	
SOIL AGGREGATE STABILITY: SLAKE TEST <sup>1</sup>	
RELEVANCE	Soil stability is a key property that is related to soil chemical, physical and 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 your 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
<sup>1</sup> sources: <a href="https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcseprd1762487&amp;ext=.pdf">https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcseprd1762487&amp;ext=.pdf</a> <a href="https://quiviracoalition.org/product/soil-health-workbook/">https://quiviracoalition.org/product/soil-health-workbook/</a>		

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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).	

Working

Front

RECOMMENDED MANAGEMENT PRACTICES			
<i>For more details on how to improve soil properties, refer to posters' numbers given in the table</i>			
	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

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

## Example: Module 1

<b>Topic</b>	What is soil?					
<b>Posters</b>	 <p>What is soil?</p>	 <p>How to best manage your soil</p>	 <p>How to enhance soil organic matter content?</p>	 <p>What is soil pH?</p>		
<b>Field exercises</b>	 <p>Aggregate stability</p>	 <p>Soil pH</p>	 <p>Roots</p>			

Evaluation

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# Visual identity



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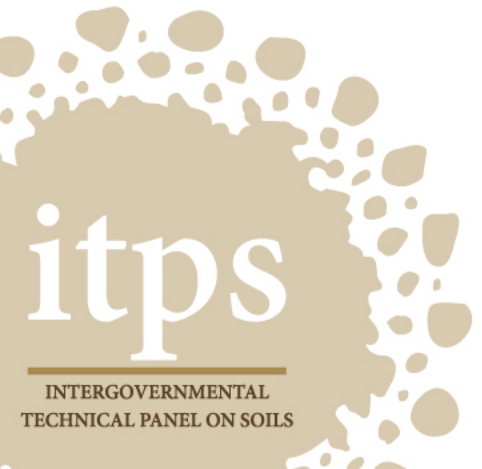
# Implementation activities: Overview

Country	Promoter	Topic	Trainers	Farmers	Soil Doctors
<b>Bangladesh</b>	SRDI - DAE	Soils4nutrition	10	450	15
<b>Bolivia</b>	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
<b>Kazakhstan</b>	Farmers association	Salinity	10	200 to 300	50
<b>Malawi</b>	TBD	Soils4nutrition	TBD	500 to 800	TBD
<b>Mexico</b>	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

The screenshot displays the website for the Global Soil Partnership, specifically the Global Soil Doctors Programme. At the top, there is a navigation menu with links for Home, Overview, Partners, Regional partnerships, ITPS, Technical networks, Areas of work, and Resources. Below the menu is a banner image featuring a cartoon soil character, a man and a woman in a field, and silhouettes of farmers. The main heading is "Global Soil Doctors Programme". A sidebar on the left lists menu items: About the programme, Implementation plan, Implementation sites, Educational Material, How to get involved, and Publications and events. The main content area has a heading "Welcome to the Global Soil Doctors Programme" and a sub-heading "A farmer-to-farmer training platform". The text below describes the website as a source of soil information and knowledge, and a farmer-to-farmer training platform, emphasizing the importance of soil as a vital resource for various stakeholders. Below the text is a world map with blue location markers in various countries. On the left side of the map, there is a sidebar for "Bangladesh" with the following details: Country: Bangladesh; Promoters: Ministry of Agriculture; Bangladesh Agricultural Research Council (BARC); Soil Resource Development Institute (SRDI); N of Trainers: 10; N of Soil Doctors: 15; N of farmers trained: 0; Resources: 0; Contacts: email.



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# Communication and visibility

- Highlights published

## Positioning the Soil Doctors Programme as a mechanism that matters

As the Soil Doctors Programme enters its second year, it has successfully scaled-up farmer-to-farmer training initiatives in Bangladesh, Malawi and Mexico. The Programme will continue to strike up robust partnerships for the benefit of smallholders, empowering them to scale-up cost-effective, sustainable soil management (SSM) practices.



### 27/01/2022 Empowering farmers to safeguard sustainable soils

The Global Soil Doctor Programme is a farmer-to-farmer training initiative. Global S Program principles preserve contribu

These pilot schemes have illustrated the importance of establishing the national promoter and the "champion" farmer – also known as other farmers in the local community.

Promoters are an essential component of the Programme in a country so that they can offer solutions from knowledge, experience and resources to extend them to their local communities. Promoters are often national extension services, soil science societies, agricultural organizations (NGOs) or farmers' associations.

## Thailand's testing kits empower farmers to monitor the state of their soils

### Getting the balance right: regulating soil pH values to improve agricultural production



**23/02/2022** The Global Soil Partnership's (GSP) Soil Doctors Programme is upgrading the soil testing kits that are part of the Programme's educational materials thanks to a donation from the government of Thailand.

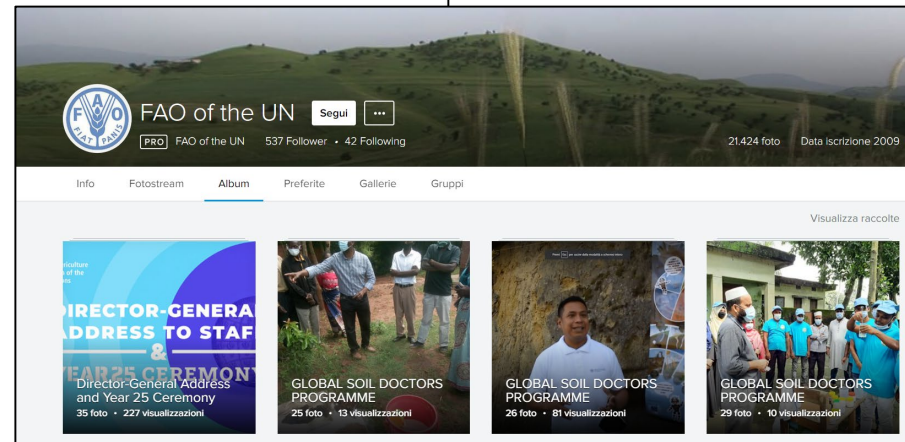
Earlier this month, Thailand donated 1,000 soil pH testing kits to the GSP to be distributed to farmers who are participating in the Programme, which currently spans Bangladesh, Bolivia, Burkina

Faso, Colombia, the Gambia, and Mexico.

Other countries will be selected to engage over the course of 2022 so that the Programme can enhance its' capacities and extend the reach of sustainable soil management (SSM) to different regions around the world.

The Soil Doctors Programme started in Thailand in 1995 and is now being extended globally through the GSP. The Thai government has supported a number of the GSP's initiatives over the past ten years and is committed to soil health and SSM.

Hej was a passionate and recognised soil scientist, and the member – is held in his name.



- Media gallery updated regularly









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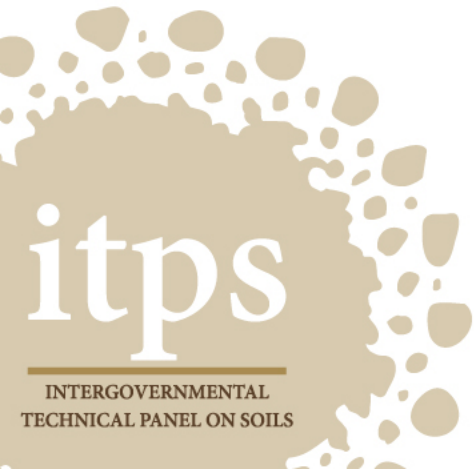


# Expected collaboration

- Poster revision and development
- Field exercises revision and development



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# Pictures from the training

## Botswana



## Malawi



## Mexico



## Bangladesh



<https://www.flickr.com/photos/faoftheun/albums/with/72177720296280200>

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# Thank you !

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**Contacts:**

[soil-doctor@fao.org](mailto:soil-doctor@fao.org) [silvia.pioli@fao.org](mailto:silvia.pioli@fao.org) [carolina.oliverasanchez@fao.org](mailto:carolina.oliverasanchez@fao.org)

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