



Food and Agriculture  
Organization of the  
United Nations



# Global Soil Doctors Programme





# What is it?

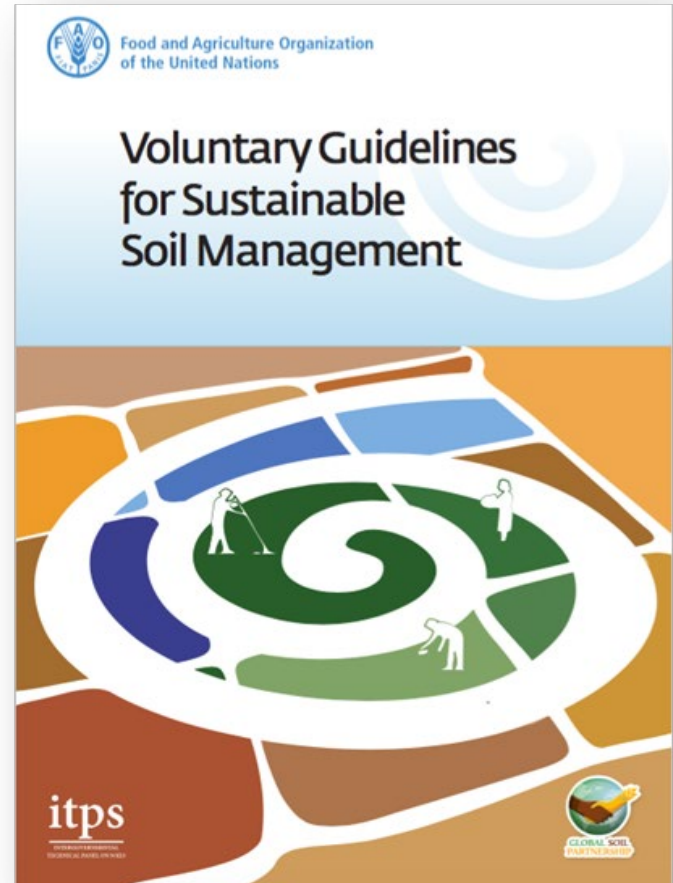
- Farmer-to-farmer training programme

## Aim

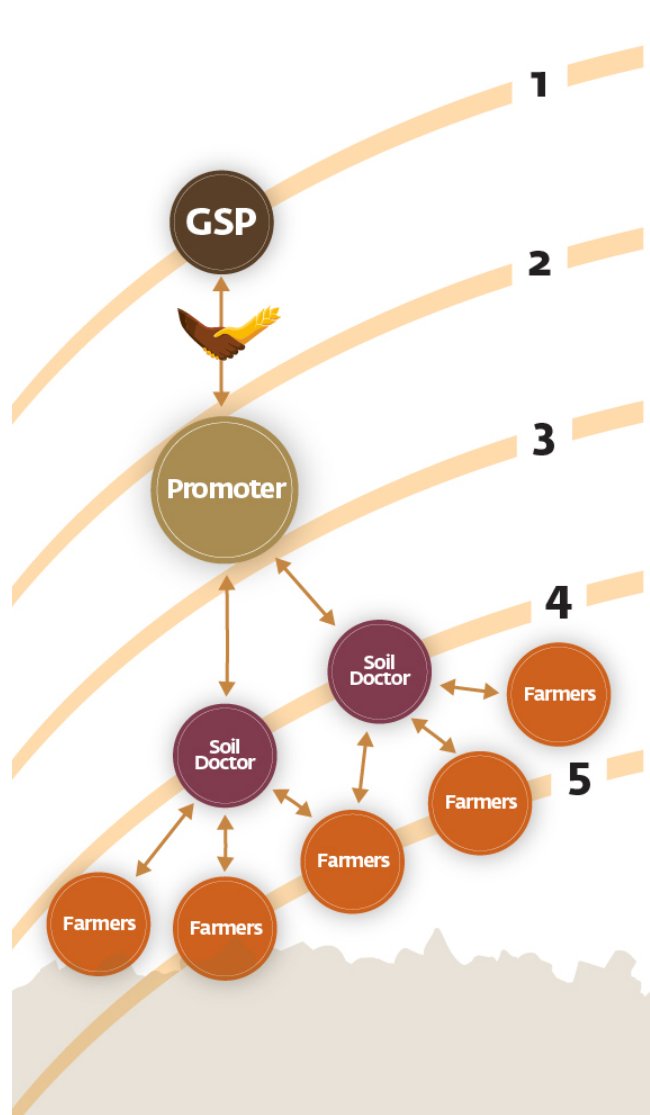
- Building the capacity of farmers on soils and sustainable soil management;

## Perspectives

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



# 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



# ToR and Registration



Food and Agriculture Organization  
of the United Nations



## 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.



## 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



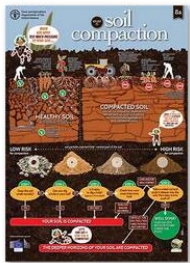
# Posters' overview



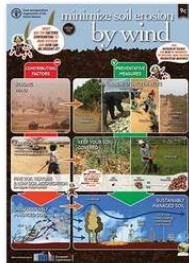
What is the Global Soil Doctors programme?



How to take a soil sample



What is soil compaction?



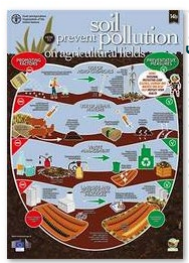
How to minimize soil erosion by wind?



How to manage soil nutrients?



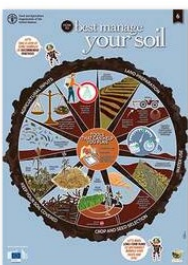
What are saline and sodic soils?



How to prevent soil pollution on agricultural fields?



How to become a Soil Doctor?



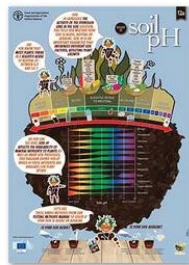
How to best manage your soil



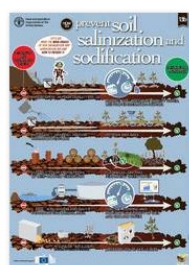
How to prevent and remediate soil compaction?



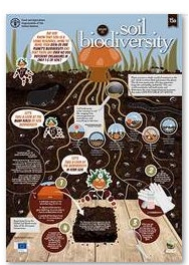
What is soil organic matter?



What is soil pH?



How to prevent soil salinization and sodification?



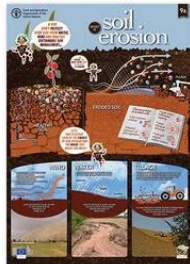
What is soil biodiversity?



Why are your crops not growing well?



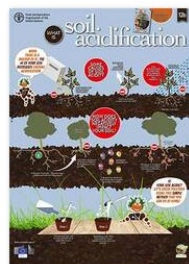
What are the physical soil properties?



What is soil erosion?



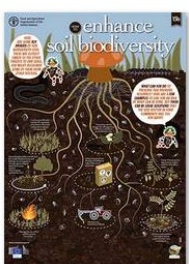
How to enhance soil organic matter content?



What is soil acidification?



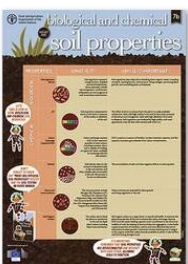
How to manage salt-affected soil?



How to enhance soil biodiversity?



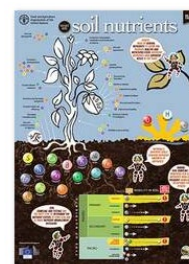
What is soil?



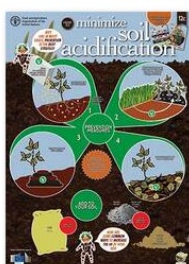
What are the biological and chemical soil properties?



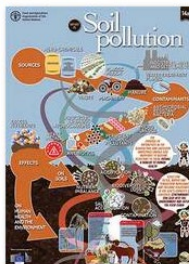
How to minimize soil erosion by water?



What are soil nutrients?



How to minimize soil acidification?



What is soil pollution?



# Posters translations



## What is soil?

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

**Download PDF:** [High res](#)

**Official languages:** [French](#) | [Spanish](#) | [Chinese](#) | [Russian](#) | [Arabic](#)

**Other languages**

[Chichewa](#); [Chewa](#); [Nyanja](#) - [High res](#) | [Kazakh](#) - [High res](#) | [Tumbuka](#) - [High res](#) (soon available)



## How to manage soil nutrients?

This poster explains how to manage soil nutrients.

**Download PDF:** [High res](#)

**Official languages:** [French](#) | [Spanish](#) | [Chinese](#) | [Russian](#) | [Arabic](#)

**Other languages**

[Chichewa](#); [Chewa](#); [Nyanja](#) - [High res](#) (soon available) | [Tumbuka](#) - [High res](#)

# Soil educational kits



## 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*

\*the assessment of this parameter does not need any specific tool, just a visual evaluation









# Soil educational kits





# 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 <i>*Water is needed</i>
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://quviracoalition.org/product/soil-health-workbook/">https://quviracoalition.org/product/soil-health-workbook/</a>		

Back

# 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).	

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	

Back

# 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>	Soil 4 Nutrition
<b>Objective</b>	Emphasize the role of soil nutrients and soil structural components for agricultural production, food security and nutrition. Identify the best soil conditions that optimize plant nutrients uptake
<b>Posters</b>	<p>What is soil?, How to enhance soil organic matter? What is soil pH?, How to manage soil nutrients?</p>
<b>Field exercises</b>	<p>Qualitative assessment of soil physical, chemical and biological properties.</p>
<b>Evaluation</b>	<p>Final evaluation of soil condition and recommendations on SSM practices</p>



# Visual identity



Vest front



# Implementation activities



Country	Promoter	Topic	Trainers	Farmers	Soil Doctors
Bangladesh	SRDI - DAE	Soils4nutrition	10	450	15
Bolivia	AOPEB - ELCEIBO	Fertilization	26	TBD	50
Burkina Faso	BUNASOL	Soils4nutrition	20	TBD	TBD
Colombia	AGROSAVIA - INAGRU	General	17	TBD	TBD
Kazakhstan	Farmers association	Salinity	10	200 to 300	50
Gambia	FAO Gambia – SOIL SOL	What is soil	15	TBD	150
Mexico	PUEIS	What is soil	26	1500	150
Malawi	TBD	Soils4nutrition	TBD	500 to 800	TBD
Morocco	TBD	TBD	TBD	TBD	TBD
Thailand (Lancang-Mekong)	TBD	TBD	TBD	TBD	TBD
The Philippines	TBD	TBD	TBD	TBD	TBD
Chile	TBD	TBD	TBD	TBD	TBD
The Pacific	TBD	TBD	TBD	TBD	TBD
Malaysia	TBD	TBD	TBD	TBD	TBD
Uzbekistan	TBD	TBD	TBD	TBD	TBD

# Communication and visibility



- New website to be released

Global Soil Doctors Programme

**Welcome to the Global Soil Doctors Programme**

**A farmer-to-farmer training platform**

This webpage is designed as a **source of soil information and knowledge on the different components and aspects of the Global Soil Doctors Programme - a farmer-to-farmer training platform**, and the **importance of soil as a vital resource** for farmers, policy makers, development planners, agricultural extension workers, NGOs, private sectors and any other practitioners/interested stakeholder.

← Bangladesh

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



# Communication and visibility



- Highlights published regularly

## 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 that was launched in 2020 under the framework of FAO's Global Soil Partnership (GSP). The overall objective of the Programme is to strengthen the capacity of farmers on SSM principles by providing them with targeted training on how to preserve and restore good soil conditions and functions. It also contributes to raising awareness of soils globally.

These pilot schemes have illustrated the importance of establishing a strong working relationship between the GSP

the national promoters and other farmers in the

Promoters are an excellent resource to extend the reach of the Programme in a country so that the resources to extend the reach of the Programme, national agencies, national organizations (NGOs)

## 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

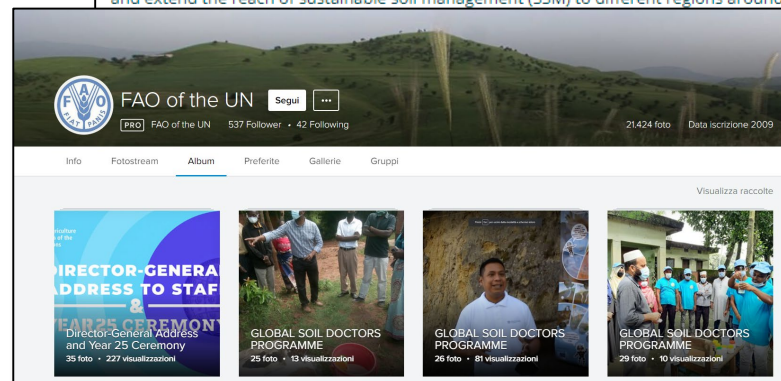
Faso, Colombia, the Gambia, and Mexico.

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.

ly through the GSP. The Thai government is committed to soil health

gnised soil scientist, and the

- Media gallery updated regularly



# Collaborations





# Thank you !



## Malawi



## Mexico



## Bangladesh



## Kazakhstan



## Bolivia



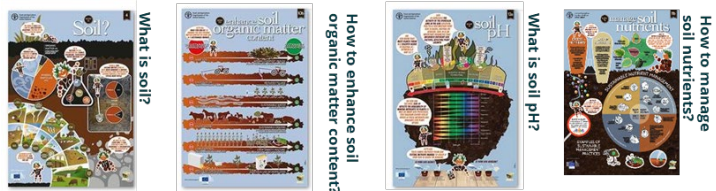


Contacts → [soil-doctor@fao.org](mailto:soil-doctor@fao.org)

[silvia.pioli@fao.org](mailto:silvia.pioli@fao.org)

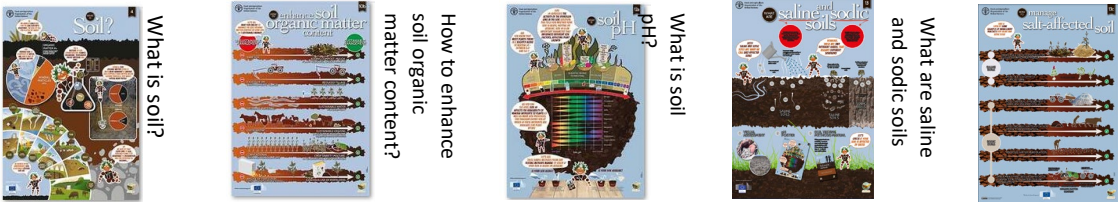


[carolina.oliverasanchez@fao.org](mailto:carolina.oliverasanchez@fao.org)






# Other modules 1 available: RECSOIL

<b>Topic</b>	Recarbonization of Global Soils (RECSOIL)
<b>Objective</b>	Highlight the role of soil organic carbon in enhancing ecosystem services such as agricultural production, food security, climate change regulation, water protection and biodiversity preservation. Identify the physical, chemical and biological soil conditions that optimize soil organic carbon content.
<b>Soil kit</b>	<u>Basic soil kit</u>
<b>Posters</b>	
<b>Field exercises</b>	
<b>Evaluation</b>	

# Other modules 1 available: What is Soil Salinity and Sodicty?

<b>Topic</b>	What is soil salinity and sodicty?
<b>Objective</b>	Understand the importance of soil structure and soil organic matter for regulating water retention and infiltration; provide an overview of the main threats related to salt-affected soils such as nutrient imbalance and soil fertility depletion; illustrate proper sustainable management practices that can contribute to reduce and prevent the negative impacts of salinity on soil ecosystems.
<b>Soil kit</b>	<u>Salinity soil kit</u>
<b>Posters</b>	 <p>What is soil?</p> <p>How to enhance soil organic matter content?</p> <p>What is soil pH?</p> <p>What are saline and sodic soils</p> <p>How to manage salt-affected soil</p>
<b>Field exercises</b>	 <p>Organic matter: Colour Observation</p> <p>Soil salinity</p> <p>Soil pH</p> <p>Roots</p> <p>Soil infiltration</p>
<b>Evaluation and recommended practices</b>	 <p>Soil salinity</p> <p>Soil infiltration</p>

# Other modules 1 available: Soil Fertility

<b>Topic</b>	Soil fertility
<b>Objective</b>	Recognize the role and importance of soil structural, chemical and biological properties for plant growth, ensuring crop production in many agricultural environments; identify the best soil conditions that optimize nutrients availability, thus, limiting the use of fertilizers; provide recommendations on sustainable nutrients management.
<b>Soil kit</b>	<u>Basic soil kit</u>
<b>Posters</b>	
<b>Field exercises</b>	
<b>Evaluation and recommended practices</b>	



# Other modules 1 available: What is Soil?

<b>Topic</b>	What is soil?
<b>Objective</b>	Understand the role of soils for ecosystem functioning; illustrate the importance soil physical, chemical and biological components and their balance for supporting healthy soils; provide an overview of appropriate sustainable soil management practices that can improve soil conditions and prevent soil degradation.
<b>Soil kit</b>	<u>Basic soil kit</u>
<b>Posters</b>	 <p>What is soil?</p> <p>How to enhance soil organic matter content?</p> <p>What is soil pH?</p> <p>How to best manage your soil</p>
<b>Field exercises</b>	 <p>Texture</p> <p>Soil aggregate stability</p> <p>Soil pH</p> <p>Organic matter: Colour Observation</p> <p>Roots</p>
<b>Evaluation and recommended practices</b>	

# Implementation plan

1

 Global Soil Partnership and the Promoter agree on the *implementation plan*

- 1 – Identify the farmer community and the implementation site/s
- 2 – Identify the trainers who are going to be trained by the GSP
- 3 – Identify the number of farmers involved
  - Approximately, number of farmers participating to the first informative meeting
  - Number of Soil Doctors to be certified
  - Approximately, number of farmers trained by each Soil Doctor
- 4 – Select the module and indicate if the translation of the educational material is needed
- 5 – Calculate the budget needed for the implementation
  - Printing of the educational material, procurement of kits and visuals
  - Training of the farmers
- 6 – Propose an agenda for the training and certification of trainers and Soil Doctors
- 7 – Provide feedbacks to the GSP about follow-up activities

# Certification process for the Soil Doctors' Trainers



- 1 Mandatory presence in the training sessions
- 2 Individual active participation
  - Validation of the methods in the local context;
  - Local examples and case studies;
  - Proposal of a module 2
- 3 List of farmers and Soil Doctors trained
- 4 Pictures and video of the Soil Doctors training process according to the guidelines provided



Delivery of the certificates