ConServe Terra
Towards Conservation Agriculture in the Mediterranean Area

PRACTICE ABSTRACT

Emphasizing soil literacy for farmer field schools

Problem

Although traditional Farmer Field Schools (FFS) on crop production and management are of great importance for farmers, a greater focus on soil processes and its management would provide a basic understanding of soil as a living entity and support farmers to practice soil conservation.

Solution

A focus of soils in FFS improves the farmers appreciation of soils and introduces them to the concept of soil conservation and apply site-specific best crop management options. The objective here is to enhance soil literacy of farmers, farmers' organizations, extension workers and mechanization services providers through increasing awareness of the soil as a living resource and societal capital.

Practical recommendation

To promote soil literacy that helps farmers to appreciate soil has a living entity, extension agents can develop a program with a co-learning platform and FFS. This program addresses: (1) existing local knowledge on soil as perceived by farmers, (2) major soil threats and (3) measure to improve soil quality with a focus on soil structure and soil carbon management.

The curricula includes on-site learning and focuses on the following topics:

- Identification and description of soil types in the field

- Description of soil profile

- Field Soil Sampling and Analysis

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Field Soil Sampling and Analysis

Sampling period:

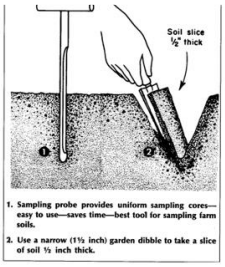
- Sampling can be carried out throughout the year. However, two periods are sometimes necessary before the application of fertilizer and afterwards in case of nutrient inputs that affect crop productivity.
- Sampling should preferably be carried out on dry soil or at the field capacity of the soil. In order to be able to compare the variation in nutrient levels of the crops, samples should always be taken at the same time of the year.

Sampling method:

The sampling method must be carried out by a laboratory officer or by the farmer himself using the following steps:

- In a homogeneous plot, i.e., same type throughout the plot in this case a single composite sample is sufficient.
- In a heterogeneous one it is necessary to first limit the zones and this calls upon a soil scientist to define the homogeneous zones of the farm.
- The depth of sampling must be carried out according to the precision of the requested analyses, the nature of the soil types and the cultivated plants. Then depending on these steps, a depth of 15 to 20 cm of soil is taken.
- The number of soil samples should be on average 20 samples per hectare and should be composed of an average of 10 cores per sample well homogenized with an average of 0.5 to 1 kg of soil.
- The location of the samples will be random and at a distance of 10 to 25m.

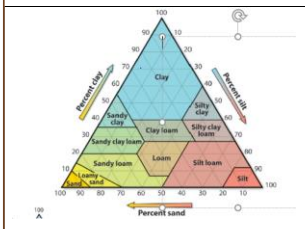
Soil analyses and recommendations see with a state registered soil testing laboratory and interpretations must be performed by a soil science specialist.

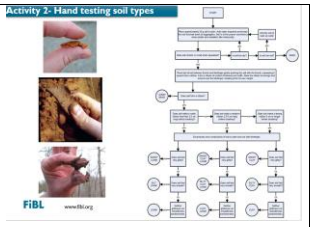


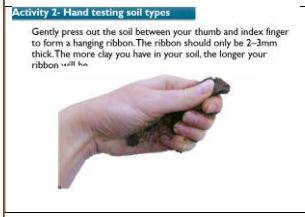
- Soil chemistry and fertilization

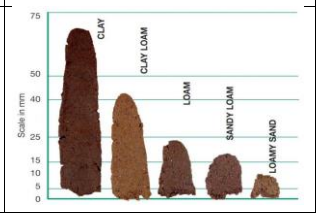
Identification and description of soil types in the field

Soil texture









Soil fractions give specific characteristics to the soil. Clay improves the nutrient holding capacity, increases water retention, soil stability, but is sometimes difficult to till. Soils high in sand characteristically have good drainage, aeration, and are relatively easy to till. Soils high in silt will be intermediate.

Description and geographical location of the cultivated plots (climate, geomorphology geology, and mapping of the different soil types) will also be discussed.

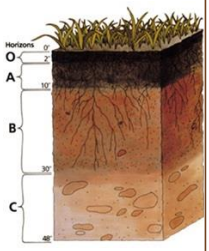
Description of soil profile:

O (humus or organic): Mostly organic matter such as decomposing leaves. The O horizon is thin in some soils, thick in others, and not present at all in others.

A (topsoil): Mostly minerals from parent material with organic matter incorporated. A good material for plants and other organisms to live.

E (eluviated): Leached of clay, minerals, and organic matter, leaving a concentration of sand and silt particles of quartz or other resistant materials – missing in some soils but often found in older soils and forest soils.

B (subsoil): Rich in minerals that leached (moved down) from the A or E horizons and accumulated here.



C (parent material): The deposit at Earth's surface from which the soil developed.

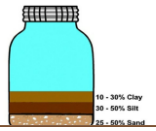
R (bedrock): A mass of rock such as granite, basalt, quartzite, limestone or sandstone that forms the parent material for some soils – if the bedrock is close enough to the surface to weather. This is not soil and is located under the C horizon.

Soil texture

Soil, Sand, and Sediment Applications

Soil and sediments scientists have long understood the importance of particle size distribution to their field. Various approaches have been developed to classify samples into formats useful for categorizing samples and predicting behavior. Some soil scientists classify soil particles into sand, silt and clay, and the relative quantities are used to define the texture of a sample. Sizes of soil separates according to the U.S. Department of Agriculture classification system are as follows:

Very coarse sand:	2.0-1.0 mm
Coarse sand:	1.0-0.5 mm
Medium sand:	0.5-0.25 mm
Fine sand:	0.25-0.10 mm
Very fine sand:	0.10-0.05 mm
Silt:	0.05-0.002 mm
Clay:	<0.002 mm



- Soil conservation methods

This project has received funding from the European Union's Horizon 2020 research and innovation programme under (grant agreement No 1913). This communication only reflects the author's view. The Research Executive Agency is not responsible for any use that may be made of the information provided. The authors and editors do not assume responsibility or liability for any possible factual inaccuracies or damage resulting from the application of the recommendations in this practice abstract.

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About this practice abstract and ConServeTerra

Publisher(s):
Research Institute of Organic Agriculture FiBL
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Project name: This practice abstract was elaborated in the ConServeTerra Project. The project time is 2020 to 2024. The project aim is to facilitate wider acceptance and adoption of CA principles in the Mediterranean area by understanding constraints and developing best management strategies under local conditions.

Project website: https://conserveterra.org/

Project partners: Research Institute of Organic Agriculture (FiBL); University of Kassel (UK); University of Barcelona (UB); Consortium of Gallecs (CPEING); National Institute of Agronomic Research (INRA); AGENDA Morocco; University of IAV Hassan II (IAVH II); El Baraka farmers association (El Baraka); West Maroc, National Institute of Agronomic Research of Tunisia (INRAT); National Agency for Field Crops (INGC); Association pour la promotion de l'agriculture durable (APAD); Office of Livestock and Pasture (OEP); Bahri Dagdas International Agricultural Research Institute (BDIARI); Conservation Agriculture Association (KTD)

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