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Soils: Advanced analytical services

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Soil and water

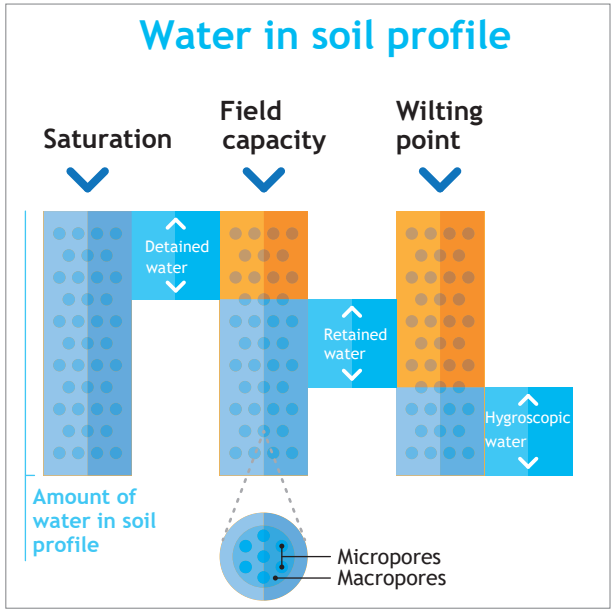
Healthy soils store and filter water, and play a critical role in sustaining food production, ensuring clean groundwater supply, contributing to resilience, and reducing flood risks.

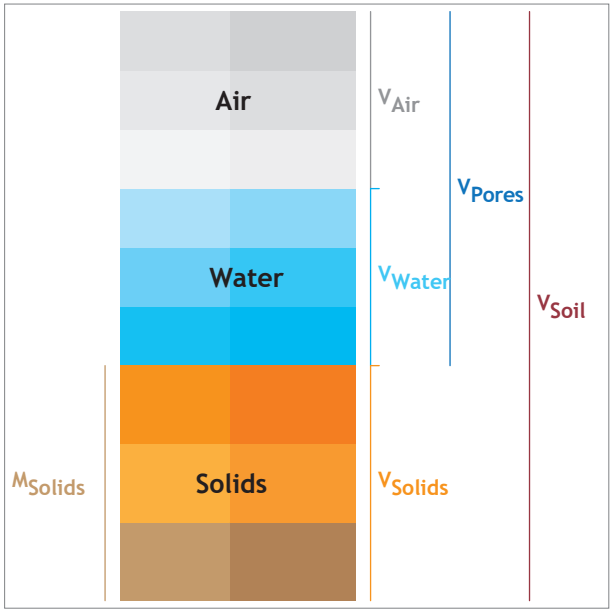
Determinations.

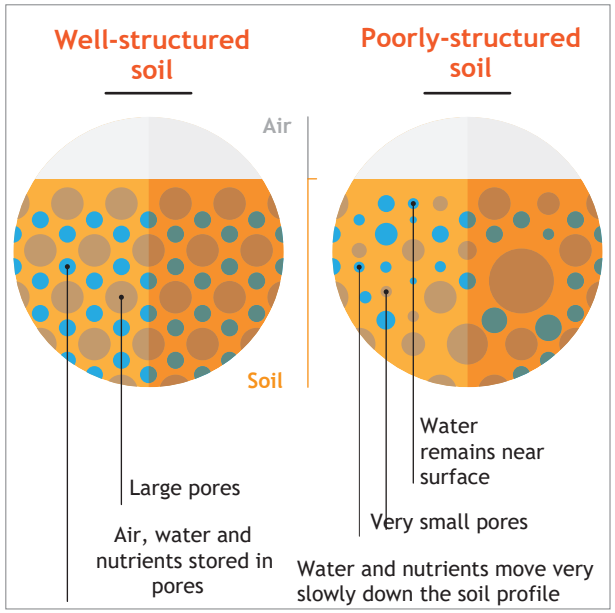
Water Retention Curves (Field Capacity and Wilting Point), Saturated Hydraulic Conductivity, Porosity, Real and Bulk Density (Archimedes), Texture, Organic Matter, Total Carbon, pH, Coarse Elements.

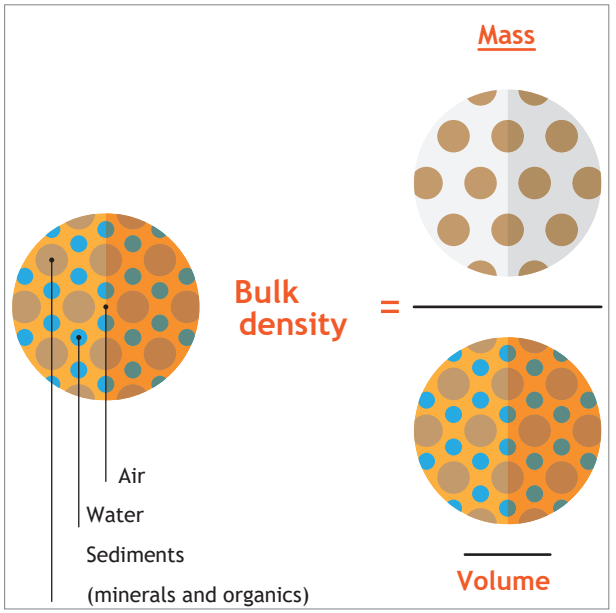
Service.

→ Guidelines for irrigation are provided from data analysis and interpretation.









Soil and fertility

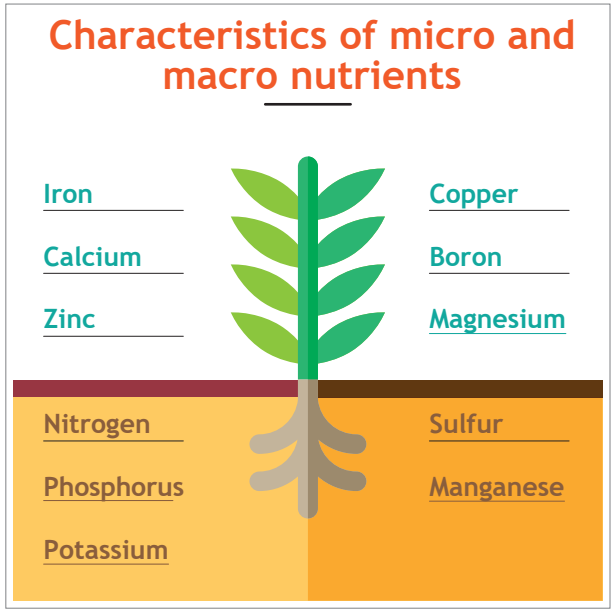
The analytical determinations included in this package are designed to better understand how soils fulfill roles related to food, fiber, and fuel provision, as well as nutrient cycling.

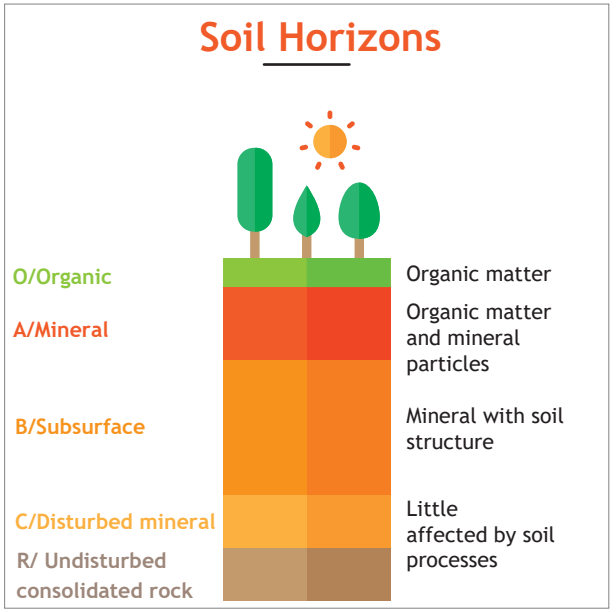
Determinations.

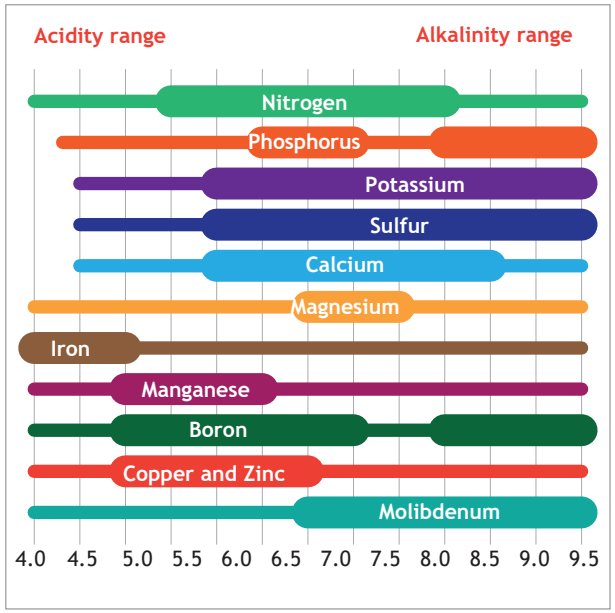
Texture, pH, Electrical Conductivity, Organic Matter, Total Nitrogen, Olsen Phosphorus, Carbonates, Active Limestone, Assimilable Mg, Assimilable K, Assimilable Ca, Assimilable Na, Cation Exchange Capacity, Aluminium, Heavy Metals, Nitrate, Ammonium, Dry Matter.

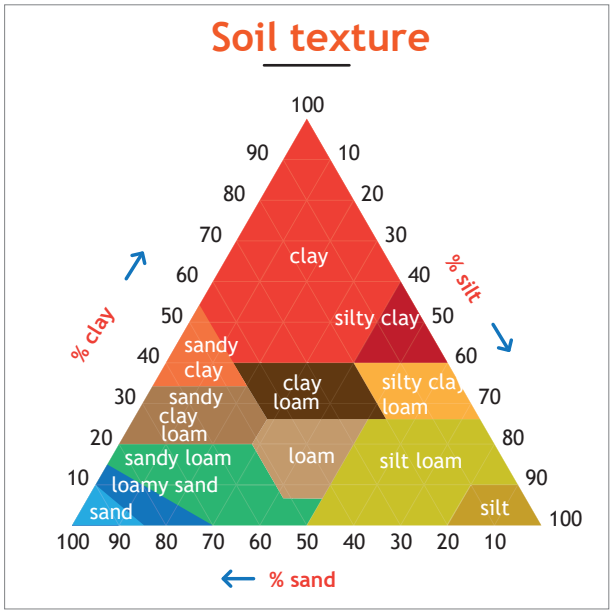
Service.

- Recommendations for an optimized fertilization and liming, while protecting soil and minimizing environmental impact.
- Evaluation of soil fertility and productive capacity.









Soil and climate change

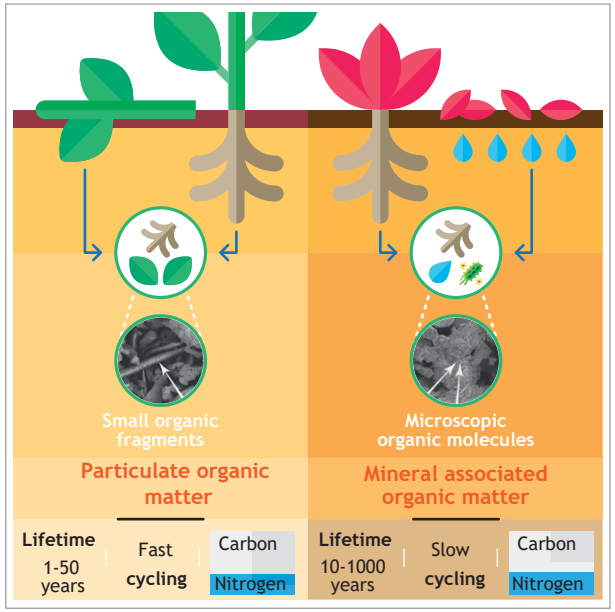
Widespread implementation of climate-smart soil and land management practices can support climate change adaptation and mitigation. The analyses compiled in this package offer insights into the potential of soils for carbon sequestration and climate regulation.

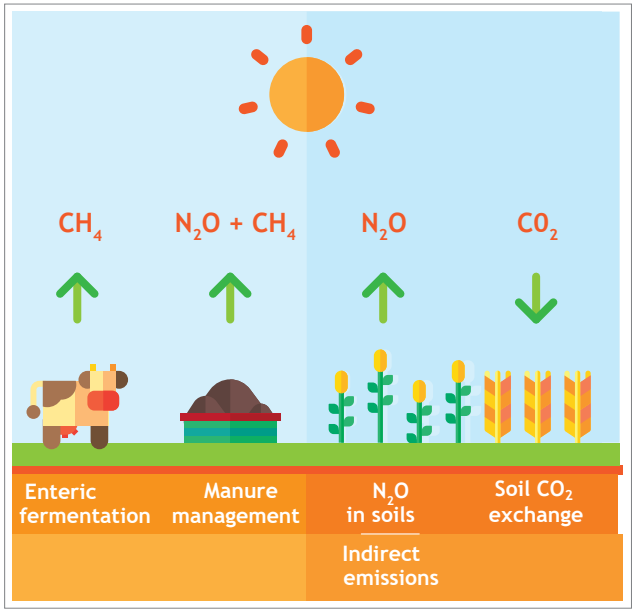
Determinations.

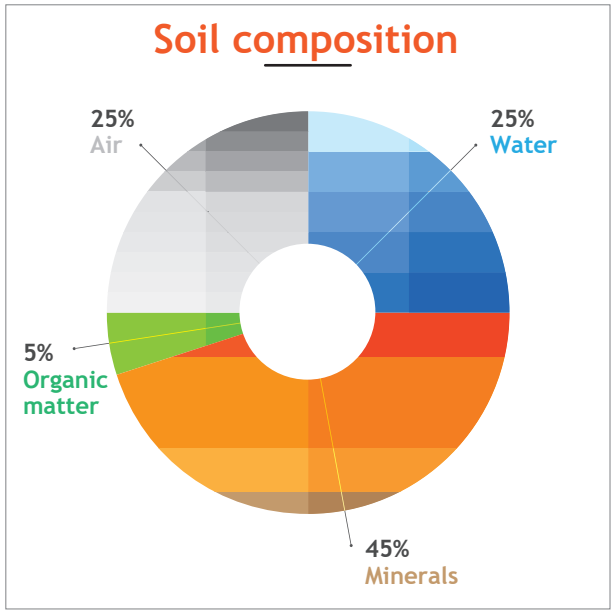
Organic Matter, Total Carbon, pH, Carbon Fractionation, Bulk Density, Coarse Elements, Greenhouse Gas Emissions (CH_4- N_2O - CO_2).

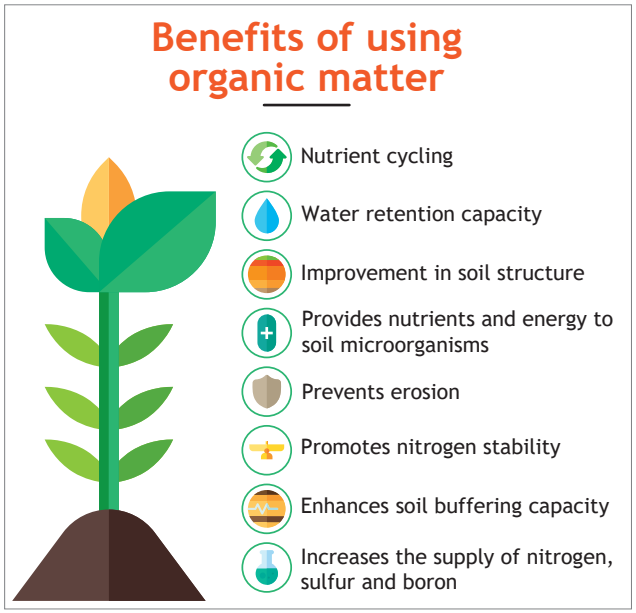
Service.

→ Recommendations on practices that lead to an increase in soil carbon sequestration and a decrease in greenhouse gas emissions.









Soil and life

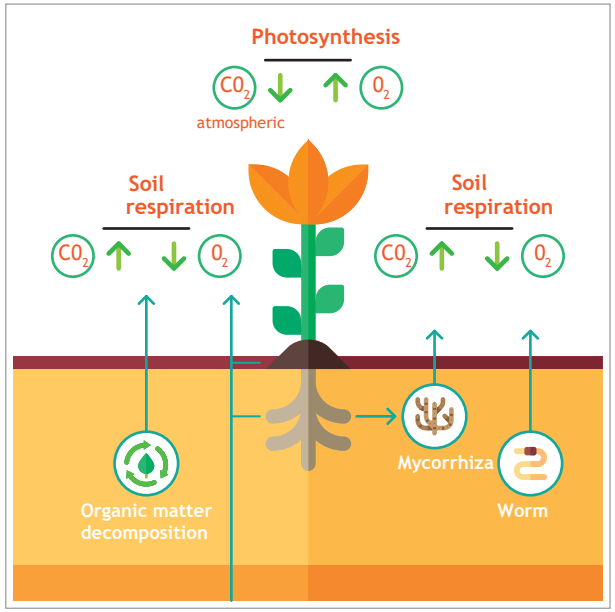
Soil organisms function as primary drivers of nutrient cycling, regulating organic matter dynamics, carbon sequestration, and greenhouse gas emissions. They also modify soil physical structure and water retention, increase nutrient availability to vegetation, and promote overall plant health.

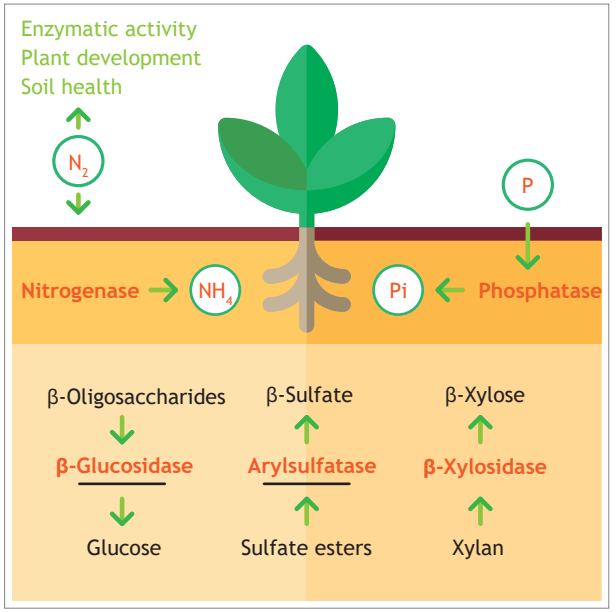
Determinations.

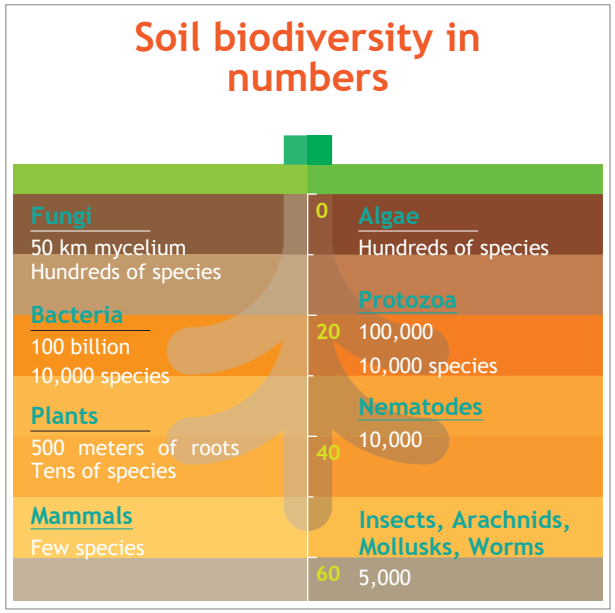
Enzymatic Activities in Plate, Potentially Mineralizable Nitrogen, Respiration, Microbial Biomass Carbon, Physiological Profiles of Microbial Communities, pH, Organic Matter, Total Carbon.

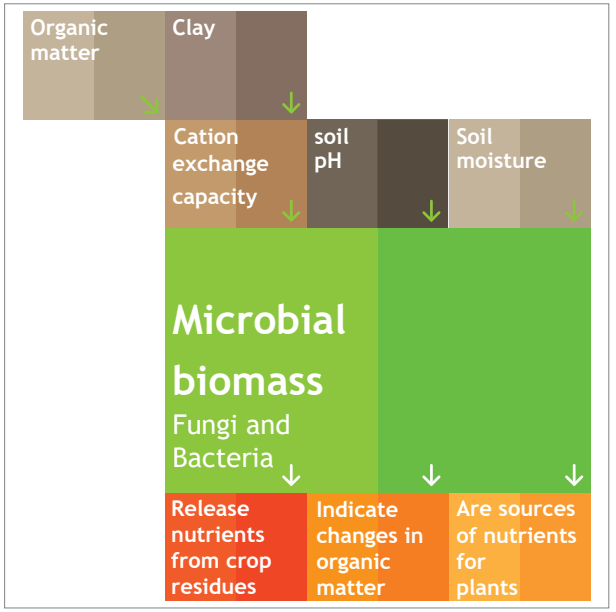
Service.

→ Soil health interpretation.









Soil and threats

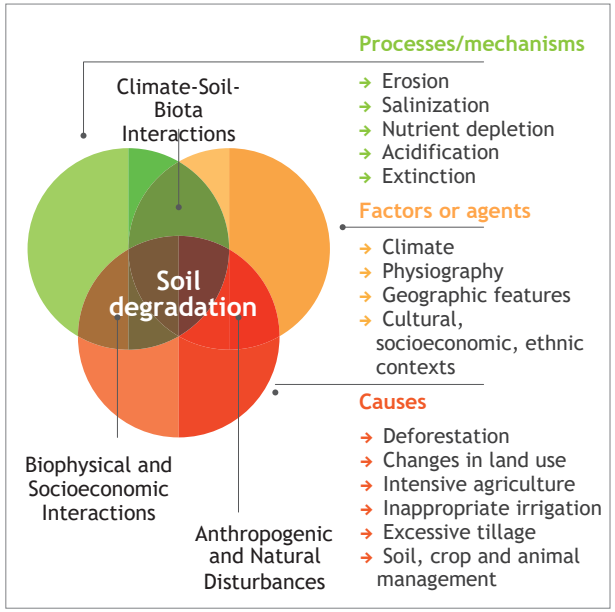
Soil degradation, resulting from different threats, compromises the capacity of soils to deliver essential ecosystem services. Soil degradation issues can cascade to other environmental matrices, such as water and the atmosphere, which are then also negatively affected.

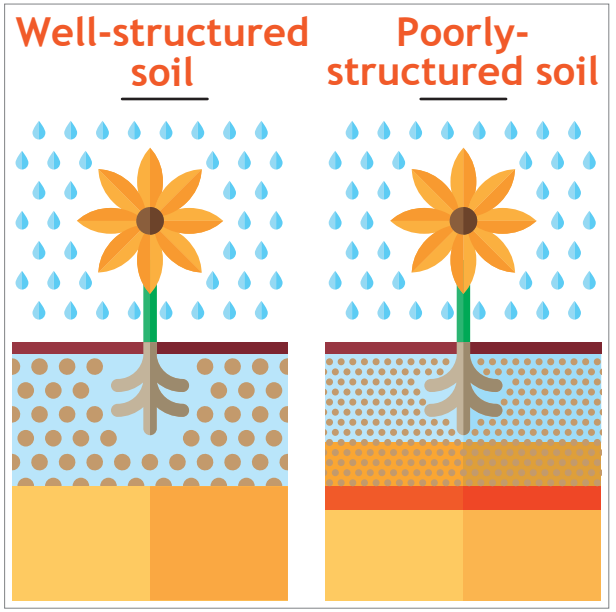
Determinations.

Heavy Metals (Fe, Mn, Cr, Cd, Pb, Ni, Zn, Cu), Decrease in Organic Matter, Compaction Problems (Bulk Density), Loss of Biodiversity, Microbial Biomass Carbon, Nutrient Imbalance (Fertility Package).

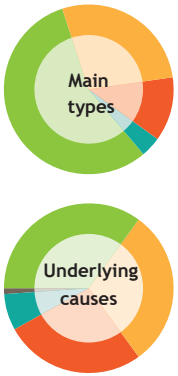
Services.

- Recommendation focused on soil erosion seeks to assess the quantity of soil lost due to different management practices.

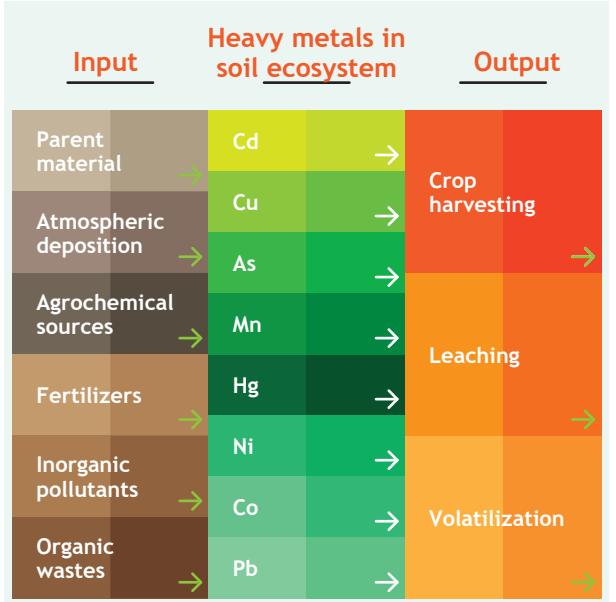




Main types and causes of soil degradation



Main types		Underlying causes	
56%	Water erosion	35%	Overgrazing
28%	Wind erosion	30%	Deforestation
12%	Chemical degradation	27%	Agricultural activity
4%	Physical degradation	7%	Overexploitation of vegetation
		1%	Industrial activity



Soil and agroecology

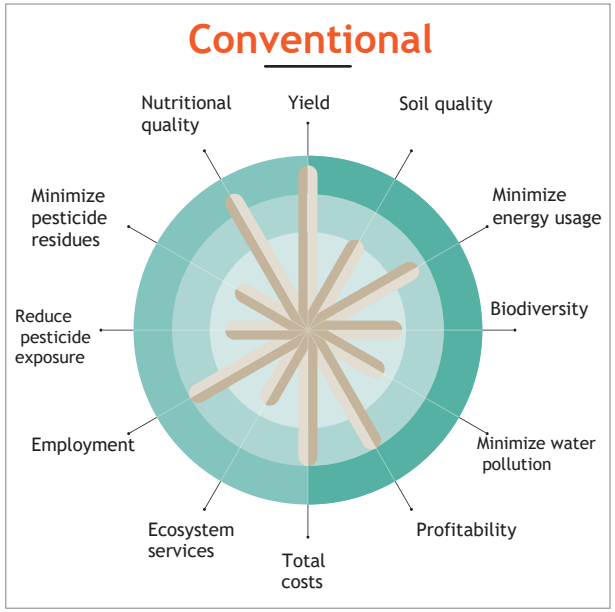
This analytical package is aimed at assisting in the transition towards a more environmentally-friendly agriculture. The aim is to promote a reduction in soil contaminants and ensure the function of soil as a habitat for organisms.

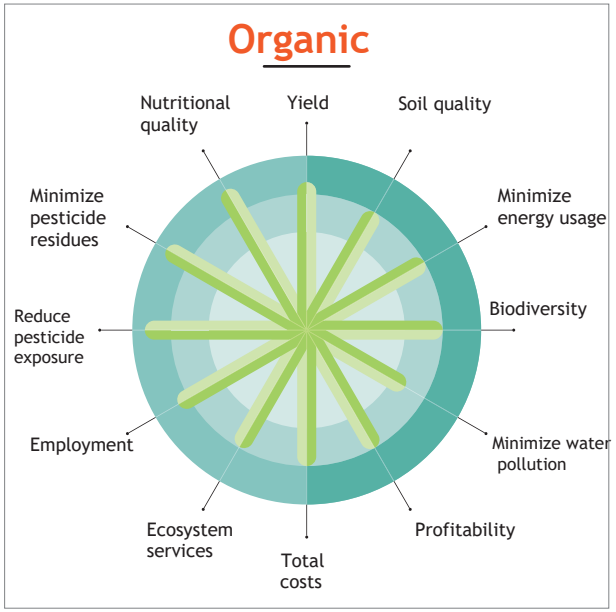
Determinations.

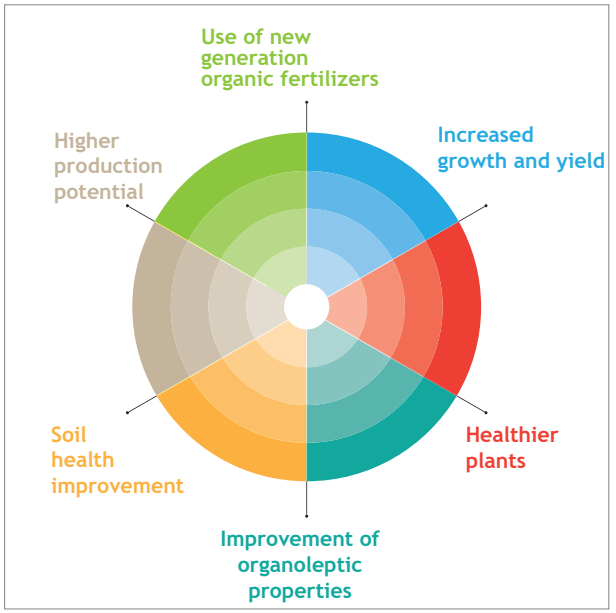
Texture, pH, Organic Carbon, Organic Matter, Total N-P-K, Carbonates, Micronutrients, Field Capacity, Wilting Point, Enzymatic Activities in Plate, Respiration.

Service.

→ A package designed to facilitate the transition towards an environmentally sustainable agriculture, encouraging a decrease in soil contaminant levels while preserving soil functionality as a habitat for organisms.







Equipment

During the last few years, our Natural Resources Conservation Laboratory has incorporated advanced laboratory equipment that allows for greater automation and precision, as well as better waste management. Among them, the following equipment stands out:

→ Inorganic Carbon, Organic Carbon and Total Carbon Analyzer, by infrared detector (TIC-TOC-TC)
→ Elemental Nitrogen and Elemental Carbon Analyzer, by electrothermal combustion
→ Liquid Chromatograph with single quadrupole detector (LC-SQ)
→ Total Organic Carbon Analyzer in aqueous samples (TOC-L)
→ Inductively Coupled Plasma with Optical Emission Spectrophotometer (ICP/OES)
→ Laser Diffractometer
→ Microwave for acid digestion
→ Gas chromatographs with flame ionization and electron capture detectors (FID/uECD) equiped with Headspace (gas samples) and injection turret (liquid samples)
→ Pressure plates
→ Permeameter
→ Fluorimeter
→ UV spectrophotometer
→ NIR (near infrared analysis)
→ Thermogravimeter
→ Multimode plate reader
→ Automatic titrator, diluter, sonicator, pH meter, conductivity meter, germination chambers, ovens, etc.

Would you like to consult your case with us?

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