



## PARTICIPATORY ECOLOGICAL LAND USE MANAGEMENT (PELUM) KENYA

# SOIL HEALTH

Participatory Ecological Land Use Management (PELUM) Kenya is a national network that currently comprises 61 Member Organizations (M.O.s) to promote agroecological principles and management practices for improved livelihoods among small-scale farmers and pastoralists in Kenya.

PELUM Kenya through the auspice of the Knowledge Hub for Organic Agriculture in Eastern Africa (KCOA-KHEA Project) has been funded by the Federal Ministry for Economic Cooperation and Development (BMZ) with the support of GIZ to implement the project “Soil Protection and Rehabilitation for Food Security”. The objective of the project is to increase the resilience of smallholder farmers and pastoralists through agroecology for improved food security and livelihoods.

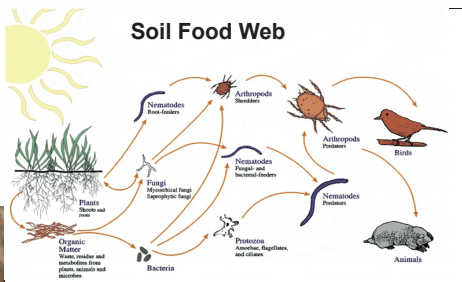
# What is a healthy soil?

A healthy soil is one that can support plant growth and maintain essential nutrient cycles. Soil health is essential in sustainable agriculture and maintaining overall environmental balance.



## How is soil formed?

- Decomposing animals and plants: Fungi and bacteria feed on the material to break it down until it is released into the soil
- Rocks and minerals break down through weathering (freezing, thawing/defrosting) and mechanical forces to create soil texture.



Agroecology places a strong emphasis on maintaining and improving soil health through natural and ecologically friendly practices. Some key aspects of how soil health relates to organic agriculture include:

### 1. Use of Biofertilizers:

Organic farming relies on organic matter, compost, cover crops and natural pest control methods. This helps maintain a balanced soil ecosystem by avoiding chemical inputs that can disrupt soil biology.

### 2. Compost and Organic Matter:

Organic farming encourages the incorporation of organic matter into the soil. Compost, cover crops and crop residues are used to increase soil organic matter content, improve soil structure, and enhance water retention and nutrient availability.

### 3. Crop Rotation and Diversity:

Farmers are encouraged to employ diverse crop rotations to avoid monocultures. Planting of only one variety of crops (monoculture) depletes specific nutrients and increase the risk of pests and diseases. Incorporating crop diversity promotes nutrient cycling.

### 4. Use of Biopesticides:

Organic farming promotes the use of natural predators and beneficial insects to control pests which minimizes the need for chemical pesticides that can harm soil health. Alternatively, farmers can use biopesticides that are either easily prepared (Apichi, Ash brew, use of tithonia etc) or purchased from trusted agrodealers.

## Average soil contains

- 45% Mineral
- 5% Organic Matter
- 25% Air
- 25% Water

# How to improve soil health

## 1. Composting

### *Did you know?*

Composting aims at managing organic matter in form of plant remains and animal wastes by recycling them into useful products as humus for soil fertility enhancement.

Different composting methods are used in different areas depending on predominant organic materials.

Pastoralists have more animal manures allowing the manure to decompose will provide the much needed organic fraction to enhance soil fertility.

- Carbon (Browns):

Mature materials or leaves, dried leaves, Straws/grass, Mature stalks, saw dust, peanut shells etc

- Nitrogen (Greens):

Immature materials or Green plants – kitchen scraps, coffee grounds and filter, fresh garden trimmings, manure from herbivores (poultry, goat, cattle etc.)

- Water (moisture & Oxygen)

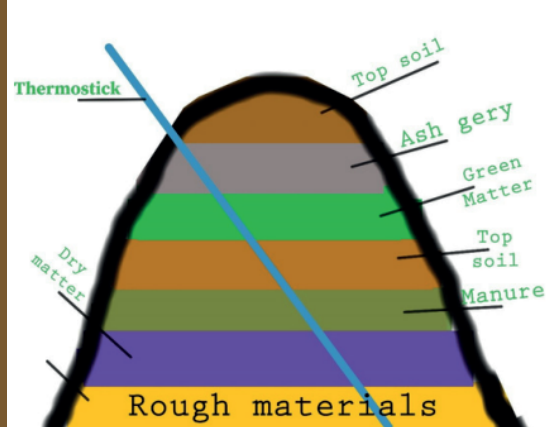


Figure showing compost hea illustration. Image is Courtesy of the training manual - Agroecological organic agriculture by Trees for Cities and COSDEP

**Note: In the compost, avoid Meat, bones, dairy products, fats, oils, Pet feces (dog, cat, other carnivores) etc.**

### *Did you know?*

The compost with a balance of materials will take 4-6 months to be mature.

Application is two handful of compost per plant hole

## 2. Liquid Manure

Liquid manure is also known as liquid organic fertilizer or liquid compost. The main ingredient is livestock waste and provides essential nutrients to plants while improving soil structure and microbial activity.



### Ingredients

- Drum/bucket
- Cow dung or manure from goat/sheep/poultry
- Sack
- Water
- Stick
- Rope

### Procedure and Application

1. Pour water into a drum/bucket
2. Add cow dung/manure to the sack and tie the top of the sack tightly
3. Tie it to the stick and submerge to the drum/bucket
4. Leave it for 21 days before it is ready for use
5. Apply cupful around the stem of every plant/vegetable

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