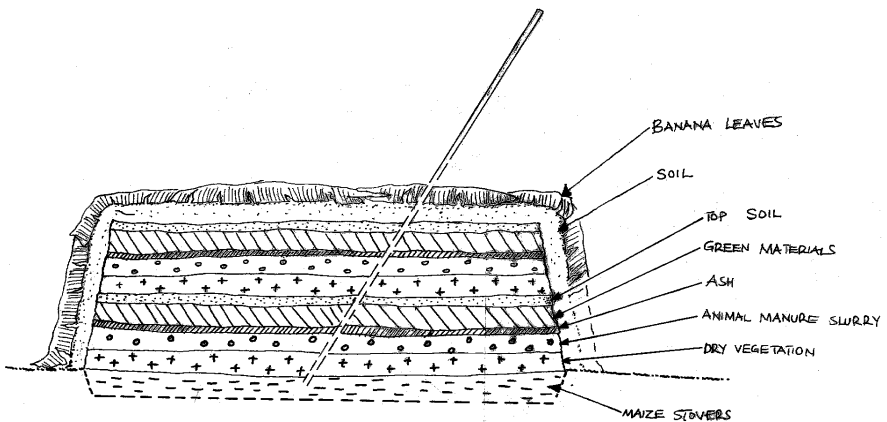


QUALITY COMPOST FOR BETTER CROP YIELDS



Preamble

The Soil Management Project (SMP) was initiated in 1994/95 as an adaptive research project in Kenya Agricultural Research Institute (KARI) with financial and technical support from Rockefeller Foundation. The main objectives of the project were, a) to improve smallholder agriculture by developing low cost and sustainable technologies for increasing soil fertility and crop production and b) to strengthen the scientists capacity for conducting on-farm research, analysing of on farm data and reporting.

The SMP was implemented in two centres, KARI Kitale and KARI Kisii. The project adopted the farmers Participatory Research (FPR) approach to implement research activities so that farmers and other stakeholders could participate actively in all stages of technology development and transfer. Collaborators included staff of the Ministry of Agriculture and Rural development(MOARD) and NGOs including Environmental Action team, VI- agro forestry Project, Manor house in Kitale, CARE –Kenya and Community Mobilisation Against Desertification(CMAD) in Kisii. Most of the research work was implemented on farm with active farmer participation. The first phase of the project ended in December 2000.

In Kisii the research was conducted in five sites Nyamonyo and Nyatieko (Kisii District), Ontondo and Kamingusa (Rachuonyo District), Bogetaorio(Nyamira District). The research work addressed decline in soil fertility, lack of suitable crop varieties and inadequate livestock feeding as the main constraints limiting smallholder agricultural production. This booklet has been prepared with support from the SMP and is produced in a language and format that would be understood by the extension workers and farmers. It is anticipated that this booklet would promote wide-scale dissemination of the technology *on how to prepare quality compost for improving soil fertility* in neighbouring villages to the study sites and other regions in Kenya having similar agro ecological characteristics.

Dr. Joseph G. Mureithi

Coordinator, SMP

Introduction

Most farmers have vegetation and other farm waste that can be made into compost. This compost can then be used in crop production for higher yields and income. Compost manure has been found to:

- Be cheaper than inorganic fertilizers
- Improve soil productivity by readily providing nutrients, improving soil structure
- Increase the water retention capacity

Making compost manure is simple. Locally available materials can be used. In 9 weeks the compost is ready for utilization. There are two methods of preparation depending on the local conditions. These are pile and pits method.

The preparation can be done all the year round for continuous supply of compost manure.

Compost making

Various types of vegetative materials and farm waste which are available at the farm can be used, such as:

- Maize stovers
- Bean stovers
- Finger millet straws
- Sweet potato vines
- Tithonia leaves
- Dry and green grass
- Macdonald weed
- Lantana
- Leaves and stems of crotolaria and mucuna
- Animal manure or slurry / kitchen wastes

Other requirements are:

- Water
- Top soil

Tools

- A long sharp, pointed stick, wheelbarrow, watering can, hoe, and machete.

How to prepare

There are 2 methods of preparation

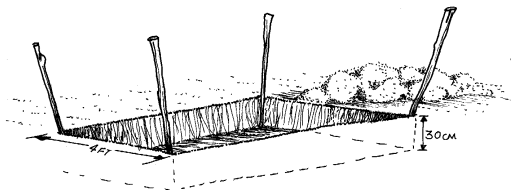
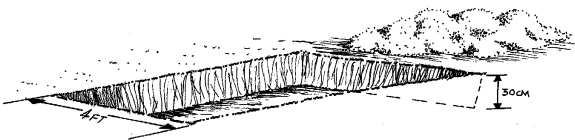
1. Pile method is recommended in high rainfall area. because it does not retain water
2. Pit method is recommended for areas with low rainfall because it retains moisture

How to make compost using pile method

- Select an area close to where you want to use compost.
- The site should be sheltered from the sun, rain, and protected from surface run-off e.g. put under a tree, under a roof or an old store or house to avoid loss of nutrients
- The length depends on the quantity of composting material. Measure 4ft (120cm) wide x 5ft height, for easy operation.

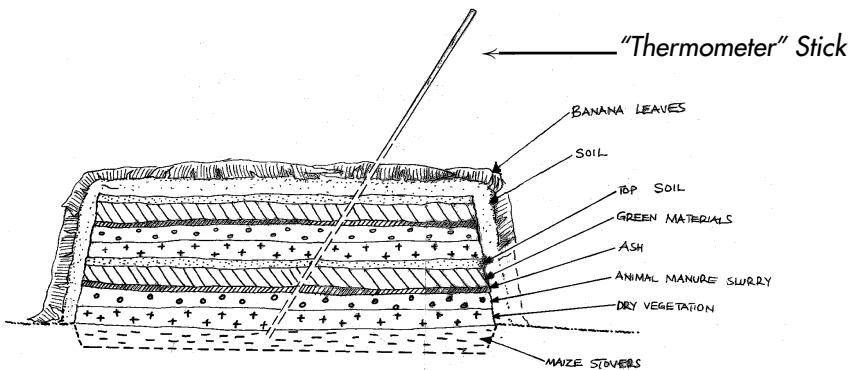
Procedure:

- Dig a pit 30 cm (1 ft) deep
- Put the soil on one side because you will need it later.
- Erect posts (2.2 m long) at the four corners of the site for the pile.



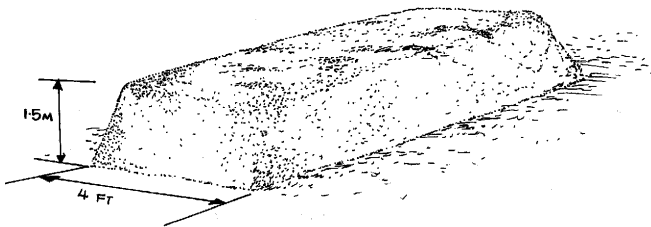
Steps

1. Chop the rough materials e.g. Maize stover or hedge cuttings and put the first layer. Pile up to 30 cm deep and sprinkle some 10 litres of water
2. Add second layer of dry vegetation of hedge cuttings to about 15 cm thick and sprinkle water
3. Put a third layer of animal manure or slurry - this provides microorganisms that are essential for decomposition.
4. Sprinkle ash as it contains essential minerals.
5. Add the fourth layer, consisting of green materials from leguminous trees such as *Calliandra*, *Leucaena*, *Tithonia* etc. This layer should be 15-20 cm thick.
6. Sprinkle a little topsoil up to 5 cm thick. The soil contains bacteria, which helps in decomposition.
7. Repeat the placement layers as in steps 1-6 above; starting with dry vegetation, then animal manure/slurry, ash, green vegetation and topsoil. Remember to sprinkle water on every layer.
The final pile should be 1.5 m high at most with vertical sides and a flat top
8. To complete the pile, cover with a layer of 10 cm thick of topsoil. This prevents plant nutrients from escaping from compost pile.
9. Finally cover the whole compost pile with dry vegetation e.g. banana leaves to reduce moisture loss through evaporation.



Layers of a compost

10. Use a long pointed stick to check the decomposition. This stick is driven into the pile at an angle. **Note** that decomposition starts 3days after pile formation. The stick should be left in the pile and only removed once a week.
11. When you pull out the stick (“*thermometer*”) from the pile, it should be warm and moist but not wet. This confirms that decomposition is in progress, while a cold stick is an indication of no decomposition.
12. Sprinkle 20 litres of water on the pile every 3 days during dry spells.
13. After 2-3 weeks, turn the pile. Do not add any fresh material except water. Compost turning ensures layers are mixed and enhances decomposition.
14. Compost is ready after 4 - 5 weeks depending on the type of material used. Ready compost should have a fresh soil smell and should not contain grass leaves or animal manure.

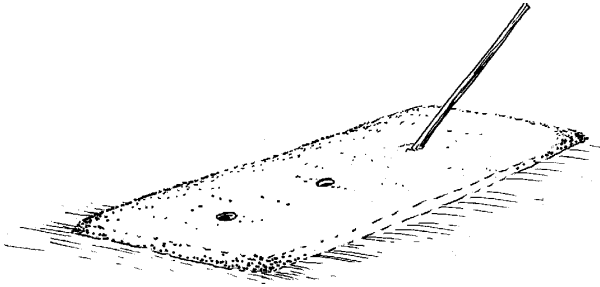


Pit method

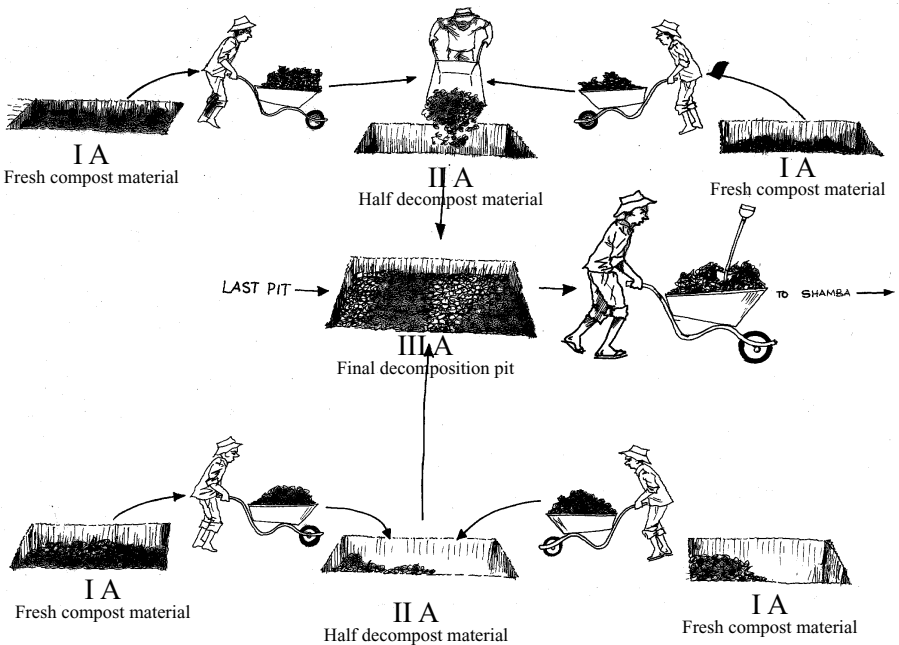
This method is useful in areas with low rainfall and along dry season. It retains moisture.

- 1 Dig a pit 1.2m (4ft) wide and 0.6m (2ft) deep. The length depends on the quantity of materials available.
- 2 Prepare a pile in the pit using the same method as in the pile method
- 3 Sprinkle water if necessary

- 4 Push long poles into the pile to allow air circulation to the layers
- 5 Turn the pile every 3 weeks



- 6 Every three weeks turn the pile into the next pile for better decomposition.
 - You can produce a regular supply of compost by digging 3 pits side by side.



Production of regular supply of compost by having 3 pits

WARNING

- Do not use material like Sodom apple or Datura sp whose seeds do not decompose.
- Do not use waxy leaves e.g. Eucalyptus or Cypres. These reduce the decomposition process.
- Do not over- water the compost pile. Excess moisture will interfere with decomposition.
- Do not use materials that do not decompose e.g. polythene sheet, plastics.
- Do not step on the compost pile or compact the layers. This will interfere with air flow

Storage

Store compost by covering with polythene or banana leaves or under a roof. Compost can be stored for 3 - 6 months



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