Ghana Soil Health Consortium

ISFM Fact Sheet series

Fact sheet No 002

Steps to composting

A. Introduction

Ordinarily, organic wastes often piled up and left unmanaged will take a long time to break down and produce low quality compost. When properly heaped and managed, organic wastes take shorter time to breakdown and produce high quality nutrient-rich compost that has pleasant earthly smell and will improve soil and crop quality when applied. The well managed compost heap also generates enough heat to kill weed seeds and plant diseases, making the compost safer to handle and use.

B. Materials to put in a compost heap

Nearly all organic materials can be used to make compost but different items will take varying amounts of time to decompose and some materials will attract pests and rodents while others will harbor harmful disease causing organisms. Different types of organic matter contain different proportions of carbon and nitrogen:

1. Fresh (green) materials decompose faster because they contain high levels of nitrogen and low levels of carbon. E.g. Manure, food scraps, green lawn clippings and green leaves.
2. Dry (brown) materials decompose slowly because they contain high levels of carbon and low levels of nitrogen. E.g. straw, branches, stems, dried leaves, peels, bits of wood, bark dust or sawdust, papers, corn stalks, wood ash and egg shells.

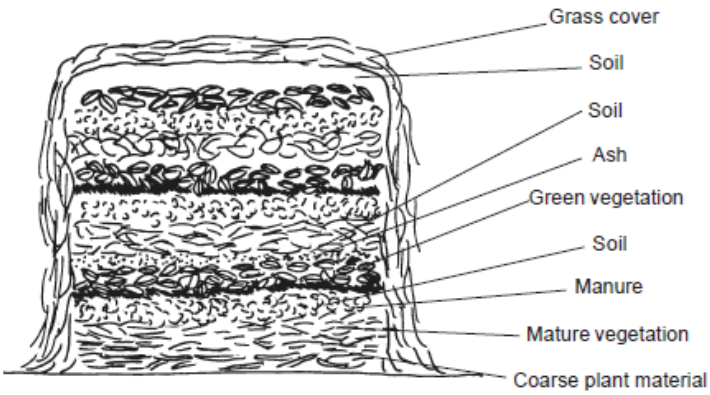
The key to a healthy compost heap is to maintain a good balance between these carbon and nitrogen-rich materials. Use one-third green and two-thirds brown materials.

C. How to build the compost heap

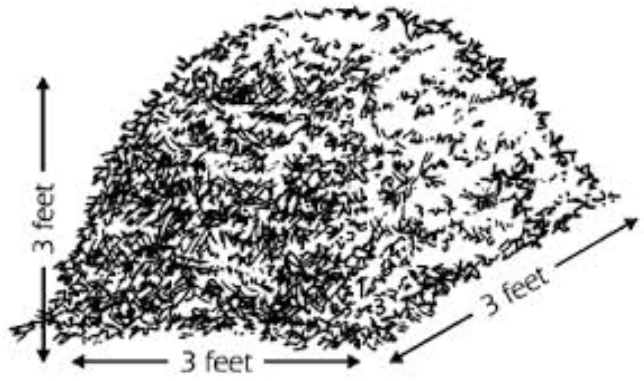
1. Start your compost heap on bare soil to allow beneficial organisms to colonize the composting materials.
2. Make a base 30 cm high and 2 m wide with coarse materials such as twigs for good air circulation and drainage (any material that will note decompose can be used).
3. Add a 10 cm layer of carbon-rich material such as maize stalks (chop bulk materials into at least 3 inches).
4. Add a 10 cm layer of nitrogen-rich material such as fruit and vegetable scraps.
5. Add 2 cm layer of animal manure or old compost to activate the compost heat and speed the process.
6. Spread a layer of soil to mask odors and introduce micro-organisms that will accelerate the composting process.
7. Sprinkle ash and urine lightly onto these layers to accelerate the process of decomposition.
8. Water the heap thus formed.
9. Repeat these layers except the first layer of coarse material, until the heap reaches 1 to 1.5 m high.
10. Cover the heap to protect it against evaporation and heavy rain as this will wash away all the nutrients. Covering also helps retain moisture and heat. Sacking, grass thatch or banana leaves are suitable for this.

Note: 1. Each layer should be laid down by starting at the edge so that the heap does not collapse. Wire mesh or wooden planks can also be used around the heap.

A layer of carbon rich material – maize stalks as start for the compost heap.



Layers of materials in a completed compost heap.



Minimum size of compost heap required to generate enough heat to kill seed and pathogen.

D. Materials that should not be put in a compost heap

1. Do not compost food left-over, meat, bones or fish scraps (they will attract rats and other pests).
2. Perennial weeds (they can be spread with the compost).
3. Material with hard prickles or thorns.
4. Materials from diseased plants.
5. Do not include pet manures in compost that will be used on food crops.
6. Material which have been recently sprayed with pesticides or herbicides
7. Non-organic materials such as metal or plastic

E. Where to build your compost

1. Distance and accessibility: A compost heap should be placed in an area where it is easy to carry the materials collected. Distance and access to the fields where the compost will be applied is also an important consideration.
2. Water and shelter: Locate the heap where drainage is adequate, a shaded or sheltered area will help keep the pile from drying out. Ideally, the heap should also be located near a source of water. If you do not have a borehole close by you should keep a container filled with water near to the heap.
3. Vermin: Pests and vermin such as rats, snakes, termites, flies and mosquitoes may be attracted to the compost heap so it should not be placed too close to the home.

F. Managing the compost heap

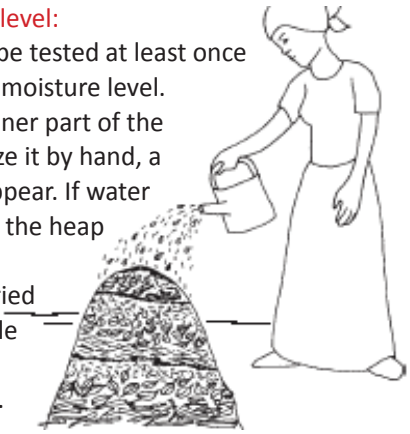
To ensure successful compost production it is important that the heap is well managed after it is built.

1. Maintain desired moisture level:

Moisture of the heap should be tested at least once a week to ensure the desired moisture level.

a. Take a sample from the inner part of the compost heap and squeeze it by hand, a few drops of water will appear. If water does not appear it means the heap needs water.

b. Place a small bundle of dried crop residues in the middle of the compost heap and remove it after 5 minutes. If it does not feel damp, water needs be added to the heap.



Water should be sprinkled onto the heap if it is too dry.

In dry conditions, water the heap twice a week. Reduce evaporation from the heap by covering it with banana leaves or grass cuttings. If the heap becomes too wet, open it up and mix with dry organic matter before rebuilding.

2. Turning to aerate the heap:

Turn the heap with a shovel every few weeks. Turning the heap will improve the oxygen supply and will ensure that the material on the outside decomposes as well. To turn a heap, take it apart and mix it so that the material outside of the heap is put in the middle and then rebuild it. If the heap is dry, add water, and if it is wet, add dry matter

Turning compost heap with shovel or pich fork mixes the material and adds oxygen - aeration

3. Keep the pile at the proper temperature

Temperature of the heap should be tested 10 days after it has been built and few days after each turning. To test the heat of the heap put a pointed stick into the heap.The stick should feel slightly too hot to touch when removed after a few days. If it does not, this may be because decomposition has not started. In this case, more air or water may be needed. If the heap is very hot, decomposition is happening but the excessive heat may kill the microorganisms. In this case, cover the heap with some material to reduced the supply of air and add more water to cool it down.

Using stick method to test the heat of a compost heap.

G. Maturation

After some months into the compost process when heap does not heat again (using the stick method for testing heat above) it means decomposition has ceased and heap should be left to mature and cool down to normal air temperature. At this stage the heap should still be kept covered to protect it from the rain and sun. No watering and turning is needed but the compost must remain moist, but not wet. The compost is matured and can be used when most of the original material is no longer recognizable and has turned into dark brown and crumbly with pleasant earthly smell. Generally the compost will take about 3–5 months to mature.

For more information
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