Practical composting

What is this Action Sheet about?
This Action Sheet is about compost and how to make it. Compost is organic matter (bits of plant and animal) that has been rotted down by the bacteria and other creatures. You can make it yourself, and add it to the soil to improve your crops.

Why compost?

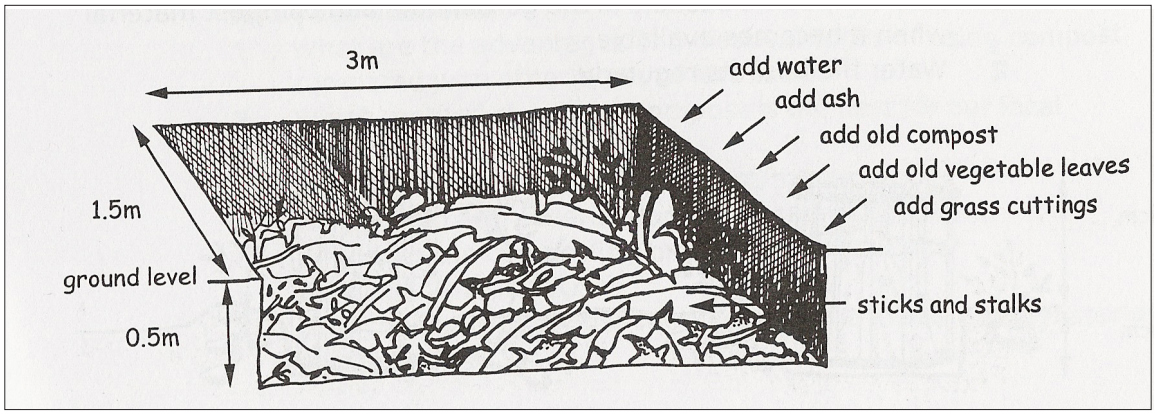
- Compost is cheap and easy to make. It uses materials that would otherwise have been wasted. Instead, the nutrients in these waste materials are taken up by your crop plants, making them extra healthy to eat. Leaves, fruit skins, kitchen waste and animal manure can all be composted.
- Compost improves soil fertility by adding nutrients to the soil. This produces better crop yields. Like compost, chemical fertilisers provide nutrients for plants, but they do not feed the soil life. This means that they do not improve the soil structure, and usually only improve yields in the season in which they are applied.
- Compost feeds the living creatures in the soil. Healthy soil life helps to improve soil structure, letting more air into the soil, improving drainage and reducing erosion, so the beneficial effects are long-lasting.
- Healthy plants from healthy soil can fight pests and diseases more easily.
- Compost is less likely to burn plants than fresh manure. It is more compact than manure (less carrying!). The heat of the composting process kills weed seeds.

Are there any disadvantages to composting?
To make a lot of compost requires a lot of labour and water. It uses some materials, like leaves and grass, which could have been used for mulching.

How do you make compost?
There are many ways to make compost. The best way for where you live depends on what materials you have, and what the climate is like. Here are three composting techniques suitable for use in schools and on small farms.
You will need:

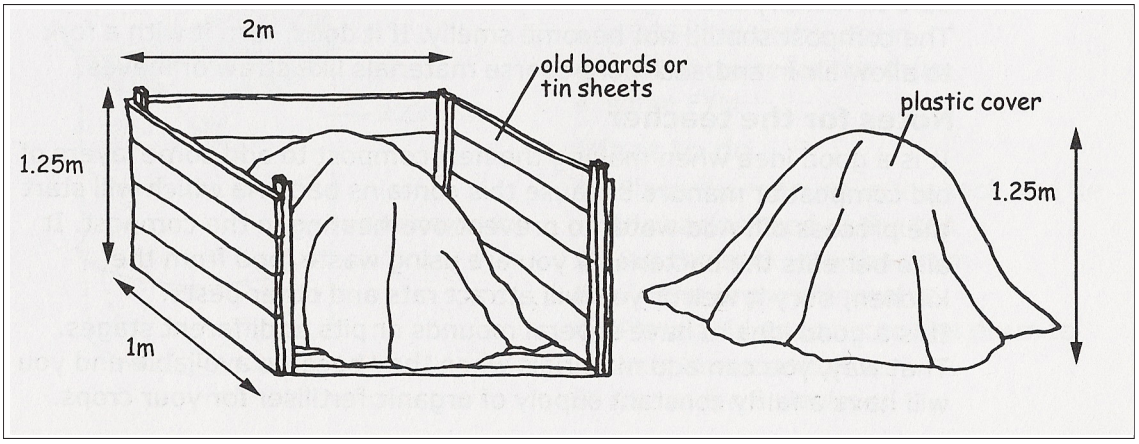
- Slashers, rakes, fork, shovel, watering can, wheelbarrow.
- Organic matter, for example, cut vegetation from school grounds (grass, weed, leaves); ash from wood fires; household waste such as leftover food, outer leaves of vegetables, tea leaves, eggshells etc., topsoil, manure (not human waste) or old compost.
- Wooden stakes.
- For the cover: some tin or plastic sheeting or dry grass, or strong crop stalks such as maize, or banana leaves.
- Some large stones.

Method 1, a compost pit - suitable for dry conditions.



1. Dig a pit. Its size depends upon how much material you have available but 1.5m x 3m and 0.5m deep is a good guide.
2. Put layers of different organic materials in the pit, starting with small tree branches, maize or rice stalks, banana leaves or other tough parts of plants which will take a long time to become rotten. After a few layers of different household waste products, you can add a layer of ash, (not too much) or topsoil. If you are using waste food from the kitchen, bury it well or you will attract rats and other pests. Don't put meat on the heap. It is a good idea when making new compost to add some layers of old compost or manure because this contains bacteria which will start the process off.
3. Water each layer before adding the next, finishing with a layer of topsoil.
4. Spread straw, plastic, or tin sheets over the mound inside the pit in the rainy season. In dry periods, the compost can be made without a cover under fruit trees like bananas – the nutrients which seep out from the compost will benefit the trees.
5. The compost should be kept damp. Ask a student to push a stick into the mound as a 'compost thermometer'. Pull out the stick and check it each day – the stick should be warm and quite clean. If the stick is hot and showing a white fungus, dig another pit and turn the compost into it with a fork, loosening up the pile to allow air in.
6. Pour plenty of water on the mound under the cover once a week, this is to prevent over-heating.
7. The compost is wet enough when your hand stays damp after squeezing a handful. If the water drips or runs out, it is too wet.

Method 2, a compost mound, suitable for wet conditions.



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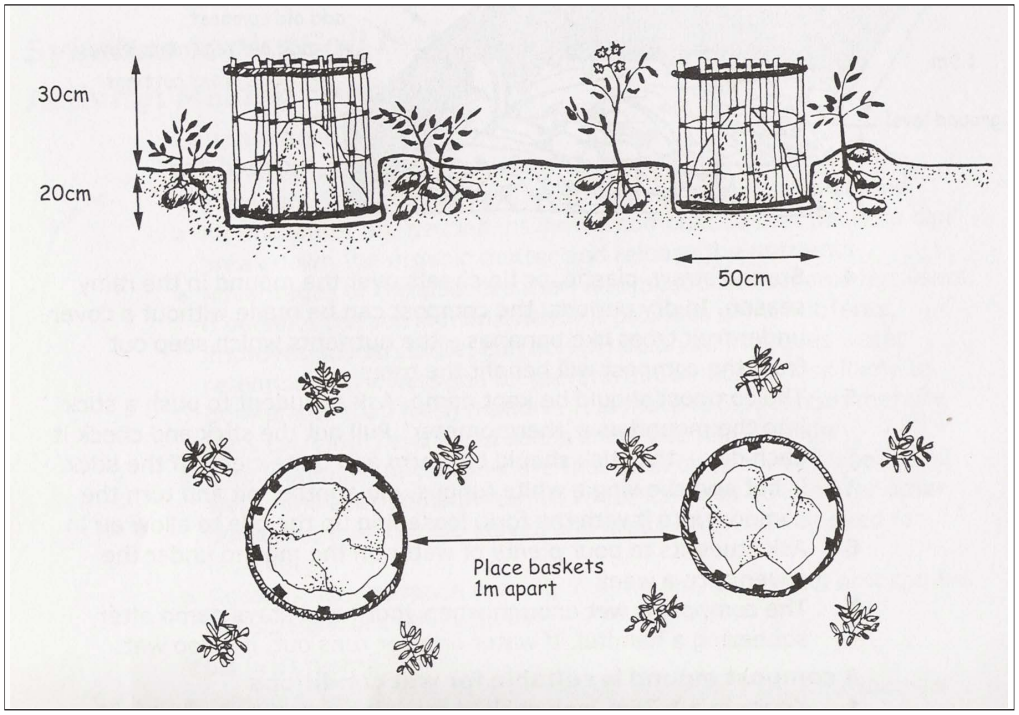
Making a compost mound.

1. Knock in a 1.25m long stick to mark the corners of a rectangle, 2m x 1m.
2. To protect the mound you can place old wooden planks, tin sheets or thick sacking between the corner sticks to make simple walls (this is optional).
3. Then ask your students to layer the material in the same way as described for the compost pit, but build up the mound above the ground instead. When the mound is about 1.25m high, cover it with topsoil and a cover as described above.

If you only have space for one or two compost heaps of any type, you can add waste material gradually and then cover the heaps when they are big enough. It is a good idea to have several mounds or pits at different stages. That way, you can add materials when they become available and you will have a fairly consistent supply of organic fertiliser for your crops.

Method 3, Compost baskets, suitable for any conditions.



Half bury some baskets in the garden between your crop plants and add compost material when it becomes available. Water the baskets regularly**.**

What will happen inside the compost?

The bacteria inside the pit, pile or basket will break down the organic matter and release its nutrients into a form that can be used by the plants. The compost mound and pit are built so that the bacteria have enough air and water to do their job.

After 6-12 weeks (depending on the air temperature), the compost in the heaps should have rotted. You can tell this has happened when the material has become a dark, rich, lumpy mass. You should not be able to identify the original materials that used. The compost should not become smelly. If it does, turn it with a fork to allow air in and add more coarse materials like straw and leaves.

How can my compost be used?

Compost is often used close to home in the kitchen garden. When preparing a soil bed for sowing seed, compost can be mixed with the top 10cm of soil. It should not be dug in any deeper as crop roots will not be able to take up the nutrients released by the compost.

An effective way of using limited supplies of compost is to place small amounts of compost directly into the planting holes. In dry areas these holes can be extended into pits or furrows to use for trap draw it into the soil where it will decompose further. When using compost as a mulch it should be covered with a thin layer of straw. This will avoid loss of nutrients due to direct exposure to sunlight and heat.

Compost can also be mixed with soil and used for raising tree seedlings and can be used as fish feed.

Compost can be combined with water and used as a “compost tea” as a quick boost for indoor plants (See Action Sheet 32).

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Acknowledgements

This Action Sheet was prepared by Nancy Gladstone, based on the VSO Agricultural Science Teacher’s Handbook by Peter Taylor, and the Henry Doubleday Research Association Tropical Advisory Service publications listed below.

For more detailed information about composting techniques, consult the following sources and find out what is recommended by agricultural extension workers in your area.

References

Two documents on composting Tropical Advisory Service of the Henry Doubleday Research Association, www.gardenorganic.org.uk/international-resources give more detail about different methods of composting and ways to compost different types of materials, for example, coffee pulp, seaweed, livestock manure.

Composting in the Tropics I (PDF in English, 169Kb) (available in Swahili, 259Kb)

Composting in the Tropics II (PDF 216Kb)

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