“Making compost to improve your soil’s fertility doesn’t have to cost anything. It just needs waste materials and water from the home and a little effort.”
Compost

Compost uses easily available local natural materials such as kitchen and harvest leftovers, crop remains, weeds from farming, and animal dung and urine. All these can produce nutrient-rich soils to fertilise your gardens and fields, which can increase the size and amounts of the crops that you grow. Compost can help crops tolerate droughts because they increase moisture in the soils.

What does the activity look like?

Composting makes free fertiliser for your soil! People can slowly gather organic waste materials (such as kitchen, animal and farm waste) in piles, simple structures, pits, or any old containers. Composting breaks down organic waste materials to help produce new soil that is rich in nutrients and is good at holding water. Adding compost to soil improves the soil.

This breaking down of materials is done by worms, insects and other very small micro-organisms (or living things that occur in nature). These friendly bugs and insects help break down materials and turns them into fertiliser and nutrients for plants to use.

The easiest way to make compost is by just piling up material on the ground, but any cheap and simple structure or old container can be used. They all work well!
What are the main benefits?

Compost adds nutrients and fertiliser to the soil.

It helps produce high crop yields and more food for the family.

The only cost to make compost is a little time and effort.

It keeps water in the soil for longer, so it is available to plants and can help them survive for longer without rain.

It makes use of organic waste materials that may not be used otherwise, such as crop remains, kitchen leftovers, animal dung and urine, hair, leftover ash from the fire, or water from the household.
Preparations

Timing tips

✓ Compost will take a minimum of 3-6 months from the build-up of materials and break down until you have usable compost. It may take up to a year of advice and support from the volunteer before people become confident compost makers!

✓ Compost making is best started around harvest time when there are more crop residues (stalks, seed pods, stems, leaves, etc.) available.

What does the volunteer need to do before the activity can start?

1. Contact local or regional ministry of agriculture or livestock departments, or their extension officers. They may have trainers and experiences they can share.

2. Find out what people currently do with agricultural, household, natural and organic waste and what waste is available in the area. Composting will only work if people have enough waste products to be added to the compost

3. Select the best method(s) for making compost from the options provided below – and discuss this with experienced people.

4. Identify potential options for where to locate compost piles and whether composting is best done by individuals, households, or as a community.

5. The volunteer should start to collect organic waste and materials, to show people how to build simple structures and what types of old containers they could use. This will help them to carry out the training.

6. Participants should be encouraged to start collecting ash, animal dung, and farm and kitchen waste, to start to use when they are ready.

How to avoid risks

- Only natural, organic materials can be used to make compost. Plastics, including bags and pieces of plastic, will not break down and may even contaminate the compost. Many types of paper, cloth, and card are covered with paints or dyes or made of artificial fibres which are also not safe or suitable to use in compost.

- Ensure that the composting takes place in a safe location, where it won’t contaminate, won’t contaminate any food or drinking water and is far enough away from any food stores. Compost piles can attract rodents and other animals that endanger food stores!

- Be careful that the compost area drains well so that it does not collect any stagnant water and become a breeding ground for mosquitoes. Check for stagnant water after heavy rains. Try to turn the compost regularly - this lets in air that will speed up the breakdown process.
### How to implement the activity?

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Step 1: Talk to people about composting and how it can improve their soil

Use the information in the sections above to explain what is involved in composting and how it can help people improve their soil.

Key messages:
- Cut larger piece of waste into small ones to help them decompose quickly – for instance chop up pieces of wood or tear up large cardboard boxes into small pieces.
- Make sure the compost pile is far away from any food stores, areas where food is prepared or drinking water sources.
- DO NOT throw any plastic, rubber, metal, tin, things covered with paint or any chemicals into the compost pile!

Step 2: Discuss what type and size of compost system each person wants to use

People can choose what suits them and their location best.

There are different compost systems: in piles, well drained pits or containers, simple structures or boxes, open or closed:

Different ways of making compost:
- The easiest way to make compost is just by piling up material on the ground. This method is most suitable for areas with good rainfall.
- Other people do it by **digging a hole or pit** in the ground. The pit method of making compost conserves moisture, so it is useful in areas with low rainfall and a long dry season. Do not use a pit in wet areas unless you are sure it will drain, otherwise as the compost may become waterlogged and become a breeding ground for mosquitos.

- Some people prefer to build a **cheap and simple structure** from any old materials to hold the compost:

![Compost corner.](image)

- Some farmers construct a compost pile between trees. Fast growing fruit trees like papaya or paw paw make very good posts and shade for a compost pile and the fruits grow very big because of the fertile soil.

![You can start a compost pile between trees – you will find you get extra large fruits!](image)
Others use any size or type of container that they can find. But remember to make some holes for drainage.

Fill any old containers with soil and compost but remember to make drainage holes in the base.

Use existing, local methods and ideas wherever you can – and adapt them. The more familiar the materials, the more likely it is that people will use them themselves.

**Step 3: Talk to people about the things to consider when deciding where to position their compost system**

- Try to choose a place that is in shade most of the time, so the compost doesn’t dry out. The friendly bugs and insects like it moist. You can add extra water or leftover wastewater from the household.
- Keep it as near to their farming plots as possible, so they do not have to carry the compost far.
- Place it near to where they gather crop residues or animal waste and urine.
- Keep the compost pile far enough from people’s houses so that any smells and flies do not bother them too much.
- It is good to try to keep your compost pile close enough to the house so that adding kitchen and household materials and leftover wastewater to the compost is easy.
- It is also good to keep the compost close by so you can keep an eye on it! Compost can be quite valuable!
- Keep the compost pile away from anywhere that food or seeds are stored, as the compost can encourage rodents.

**Once people have decided what type of compost system to use and where to position theirs, they can start to gather and construct their compost pile.**

The soil underneath your compost area will become very rich in nutrients afterwards! So, you can rotate the location of the compost after a year or two. Some people plant some vegetables or fruit trees (such as banana or papaya) close to the compost pile. Pumpkin plants make a great shade cover over the compost! You’ll be amazed how big the fruits and vegetables will become!
Step 4: Explain what materials can be used in composting

Almost any natural materials, such as garden or harvest leftovers, kitchen waste, ash, urine and manure can be used.

What to add to your compost?
The vast majority of organic materials are compostable:

- **Crop residues/leftovers/remains** from the harvest, orchard or garden plants. Crushed or chopped smaller branches from pruning, trees and shrub leaves. Hay and mown grass (preferably pre-dried in layers). Small weeds that don’t grow much can be added, but do not use weeds that grow fast and spread - they might take root in your compost! You can bake weeds on a sheet of metal laid in the sun - when the weeds are dried and crisp, they will not harm your compost.

- **Almost any animal or poultry waste, manure, urine or animal bedding materials can be used.** The bedding materials absorb the urine and are a good source of nutrients for the soil. Dung waste from cattle, goats, sheep, horses, pigs, chickens, ducks and rabbits is good but do not use dung from cats, dogs, or people, because these cause disease and illness.

- **Urine** from animals or humans is clean and sterile and is great for your compost.

- **Ash** from the fire is excellent for your compost! Leftover residues from charcoal production are also good.

- **Waste from the kitchen**, including raw fruit and vegetable skins, bones, egg shells (crushed), coffee grounds and tea leaves.

- **Old food oil and fat** (evenly spread and in small quantities).

- **Soil!** Mixing small amounts of good soil into the compost pile gives it some of the essential friendly bugs, insects and micro-organisms to get started quickly.

- **Wood shavings** (add in thin layers).

- **Wastepaper and cardboard** (not printed or coloured as this has plastics and chemicals).

- **Human or animal hair** or poultry feathers.

- **Waste from agricultural and food industries** (e.g. breweries). It’s important to talk to the business to find out what is in the waste. They may need some assistance or training from you to help them to make sure they provide the right sort of waste materials for composting.
Step 5: Explain how useful urine is in composting and as a liquid fertiliser

Use urine on compost or directly onto the soil:
Animal urine makes a perfect quick fertiliser when mixed and diluted with water. You can use it on the compost or alternatively apply directly to the soil. You can use human urine too, if you wish, but some people prefer not to.
Don’t let urine go to waste! Don’t worry - it’s clean and sterile.

This family in India constructed a compacted hard floor to collect urine from their animals.

Step 6: Explain what materials should not be added to the compost

No poisonous, toxic or harmful materials should be included:
× Chemical-synthetic materials such as adhesives, solvents, petrol, lubricants and paints.
× Engine oils.
× Non-degradable materials that will not break down (glass, metals, plastics).
× Fibreboard or plywood.
× Tobacco, since it contains nicotine and other toxic substances.
× Strong soaps, detergents, chlorinated products, antibiotics, drugs or medicines.
× Any harmful fast-growing weeds or weeds that are hard to get rid of.
× Any farm or animal waste that is likely to be contaminated by pests or disease.
× Eucalyptus and cassia tree leaves or any plant material you think may poisonous to the friendly bugs, insects and living micro-organisms in the compost.
× Carcasses, meat and animal fat because these encourage rats. These should be burned or buried.
× Cooked food leftovers and meats because these encourage rats.
Step 7: Talk to people about keeping the compost damp, adding earthworms and chopping, mixing and layering materials

Top tips on mixing materials in the compost:
✓ The best advice is to have a good mixture of materials, not too much of just one thing.

Materials to mix in the compost:
- Any crop residues or vegetation
- Animal or poultry waste, manure, urine or animal bedding
- Ash
- Kitchen waste
- Wood shavings
- Waste paper and cardboard
- Organic waste from agricultural, food or brewing industries

Almost any organic material can be used for composting as long as it does not have strong chemicals or plastics.

✓ Paper and cardboard waste is good for attracting earthworms and absorbing water.
✓ If you have a lot of dry materials like dried crop residues, that can be low in nutrients, it will break down quicker if it is chopped up before it is added to the compost. Not essential, but it helps. Mix it with other moister materials such as animal waste, dung or urine and kitchen waste.
✓ Collecting urine and dung is easier if livestock are housed (see the picture below).

Animal housing makes dung and urine collection easier and the shade increases milk yields.
The friendly bugs, flies and insects that break down the waste materials enjoy damp, quite wet conditions. You can add clean or leftover household wastewater between the layers as you build up the pile and then keep the compost damp. Try not to let it dry out ever, or the micro-organisms that breakdown the materials will be damaged. Keep the compost uncovered in the rainy season (unless the rainfall is so heavy it may wash the compost away!). Encourage people to use anything they can to cover the compost in the dry season. This will help to keep the water in. You can use layers of leaves, crop residues, grass cuttings or an old blanket, tarpaulin or sheet of cardboard, or construct a simple cover or roof. You can even cover the compost with a layer of poor-quality soil. Keeping the compost covered and away from a windy place will reduce the need to add water.

Try to add air by turning over and mixing the compost regularly.

If you can, turn over the compost every month or so as it will speed up the breakdown of the material. But if people don’t have time it is still ok, the compost will just take a little longer to be ready. Not everyone has the spare time or muscles!

Adding earthworms to the compost speeds up the breakdown of the materials and improves the soil’s ability to hold water. You can add earthworms anytime from about a month after you start composting. Any type of earthworm will do!
Step 8: Explain when the compost is ready and how to use it

People can keep adding materials to the compost whenever they have material available. The compost can be **ready to use after about 2 to 3 months.** Sometimes it may take longer. Adding animal dung and/or urine mixed with water is the best way to speed up the breakdown from waste into fertile soil. Once the compost has broken down, it can be added to the soil of your garden or fields. **When it's ready for use it will smell like soil and not like manure.** Take off any top layer of material that has not broken down and use this material to start a new compost area. Then you may add the well composted materials to your soil wherever you need it. A wheelbarrow is very helpful for this, but sacks can also be used.

**How much compost to use and how to apply it?**

It is important to encourage people to think about when and how to add compost to the soil, based on their plot. Ask them to think about how steep it is, and how likely is it that heavy rainfall might wash away the compost. If people have steep plots and heavy rainfall, then it is better to dig the compost into the soil a long time before the rains arrive, so it can enrich the soil before planting and is less likely to be washed off the steep surface by rainfall run-off.

The aim is to put the fertile compost as close as possible to the roots of the plant.

With these ideas in mind, there are lots of different ways of applying the compost:

**If the compost is old, well broken down and decomposed:**

1. **Add the compost directly into the planting hole or container** where you are planting seeds or seedlings.

2. Add the broken-down compost to a seedling nursery, so the nutrition can help seeds and young plants get a good start. Don’t use compost that is too strong and powerful on seeds and seedlings or it can burn the young plants. See Section 3 on ‘Shaded Seed Nurseries’ for more detailed information.
If the compost is young, not very well broken down or decomposed:

1. Instead of letting the compost break down fully in the composter, you can bury the semi broken down material in trenches or in holes next to the plants. There, it can be a fertiliser. Just be careful that it does not directly touch seeds, seedlings, or the roots of young plants because it is still not fully broken down.

2. Dig the compost into the soil. This is easiest to do anytime between harvest and planting times.

3. Or, apply as a ‘mulch’, which is a thin layer of compost over the surface of the soil that is to be planted. The next section explains the different mulches.

How much to apply:
Compost can be applied at the rate of: one large bucket full per 1m by 1m square, or enough to thinly cover the soil with a layer of 1cm (0.4inch) thick compost. This works out at about 1 wheelbarrow of compost for every 3 meters by 3-meter square patch of land.
Mulches

A mulch is a layer of natural material applied to the surface of soil that can:

- Reduce the loss of water from the soil.
- Add nutrients, fertility and health to the soil.
- Protect the soil surface from damage or from erosion by rainfall or running water.
- Reduce weed growth.

Where the land is steep, where rainfall is heavy, or where floods are frequent, you can advise people to think about whether it would be better to dig the valuable compost or organic mulch layer into the ground before any water comes and washes it away.

The materials people can use for mulch layers are almost the same as for composting. Here are some examples:

- Sawdust or wood shavings from a local sawmill
- Coconut shells
- Leaves
- Pine needles
- Straw
- Crop residues
- Nut shells
- Wood shavings
- Sawdust
- Organic waste materials from food and drinks and agro-industry
- Coconut shell or fibre
- Stones
- Rocks
- Pebbles
- Gravel
- Newspaper
- Cardboard
- Almost anything that doesn’t contain poisons or strong chemicals
Things to watch out for

⚠️ Try to protect your compost and stop chickens from stealing all the worms with some sort of homemade fence or barrier.

⚠️ Advise people to only put natural materials in the compost, not plastics or metals.

⚠️ The sun dries out compost. Keep it in the shade and covered if possible.

⚠️ Households with animals will usually want to feed crop residues to their animals. These households should be encouraged to continue doing so, but to collect any leftovers the animals leave and as much animal dung, urine and used bedding as possible. They may find this easier to do if they can keep their animals in a confined space during the night and capture urine by digging channels that collect urine in depressions/pits or containers.

Photo: © S. Truelove/apt.org.uk

Protect seeds and seedlings from chickens and other animals.

Animal houses that are raised up can help capture urine and dung.
“Compost is like gold for your garden and crops. It is free and the nutrients it provides will help your vegetables grow and mature successfully.”

Top tips

Points to remember when making compost in a pile

✓ It is good to make a pile in the rainy season, when there is plenty of green plant waste, getting water is easy, the materials are naturally wet, and there is plenty of water available.

✓ Compost should be in a place where it can be protected and covered in the dry season, and protected from heavy rains or flooding in the rainy season when it may be washed away.

✓ A compost pile can be made under the shade of a tree and covered with wide leaves or straw in order to protect the pile from high winds.

✓ After the rains stop, keep the pile covered and check regularly to make sure it does not dry out or get too hot, which would damage the micro-organisms.
Points to remember when making compost in a pit

- Compost in a pit works well where there is little rain. It is the best way to make compost after the rains have finished and during the dry season.

- Prepare and dig the pit, or better still, dig three pits, when the land is moist and easier to dig, or when there is a gap between other farming activities.

- If possible, make the compost immediately at the end of the rainy season while there are plenty of green and moist plant materials.

- In the dry season, make the pit near a place where water can be added, e.g. next to the home compound where wastewater and urine can be thrown on the compost materials, or near a water point, e.g. a pond, or near a stream where animals come to drink.

- Mark the place of the pit with a ring of stones or a small fence so people and animals do not fall into it accidentally.
Links to other sections in this handbook

This activity links well to the other activities in this handbook:

**Section 1**
Gardens

**Section 3**
Shaded Seedling Nurseries

**Section 4**
Homemade Liquid Fertilisers

**Section 5**
Improving Farming Practices

**Section 6**
Lead Farmers and Demonstration Farming

**Section 7**
Water Harvesting and Conservation
Resources and skills needed

What resources are needed to run the activity?

- People will need some spare time to be involved, but the work does not require great skill or high levels of physical effort. Building a simple structure can take as little or as much effort, resources or capacity as people wish. Collecting waste and turning over the compost then involves regular amounts of small physical effort.
- Small area of land or space for a compost pile or container.
- Collect material for building any structure or container.
- Gather organic waste materials and collect earthworms to add to your compost.
- Other tools that are useful, but not essential, include a tool to dig and turn over the compost, a knife or machete to chop materials, a container to collect urine and pour water onto the compost, and some material to cover the compost.

Approximate costs

Compost can be produced little cost or no cost at all, but some of the tools might need to be purchased or made. It does involve small amounts of time and effort.