

## Composting

### Guide to making the most of composting at home.

#### What is compost?

Composting is the breaking down of waste organic materials (food and garden waste) in a large container or heap. Composting can convert food and garden waste into dark coloured soil (humus) in a matter of a few weeks. There is nothing mysterious or complicated about composting. In fact, composting, or decomposition, occurs all the time in the natural world. Decomposition occurs because of the action of naturally occurring bacteria, fungi and invertebrates. The nutrients, which were once part of the living plant or animal, are returned to the soil or water where they are able to support the growth of new plants. Composting is nature's recipe for recycling.

Composting has many benefits for the environment because:

- composting food and garden waste saves valuable landfill space
- compost can be used as fertiliser on your garden
- compost improves the condition of soils

Over half of our household garbage is made up of food and garden waste. Most of this waste can be composted either in compost heaps or worm farms.

In the right conditions, a home composting heap can accelerate the natural process of decay. As bacteria and fungi feed and multiply, they give off a great deal of heat. In commercial composting systems, the temperature can reach as high as 70°C in the central core!

When the temperature drops, invertebrates such as worms and millipedes enter the heap and complete the process of decomposition.

In a pile of mature compost, there may be a wide variety of invertebrates present. In fact, there is a mini food web in action. Some creatures, such as springtails, millipedes, mites, slugs and earthworms, feed on the partly broken down materials. Other creatures, such as spiders, centipedes and scorpions, prey on the plant feeders, creating a balanced ecosystem.

#### Types of Decomposition

Before choosing a composting system for your home, it is important to understand the types of decomposition that can occur in a compost heap or bin.

##### **Aerobic decomposition - with air (preferred)**

In aerobic decomposition, the micro-organisms that thrive on oxygen break down the organic waste into water, carbon dioxide. This process is relatively rapid and can cause the heap to become hot. Compost piles need to be turned regularly to get air to the micro-organisms. Aerobic decomposition provides an earthy smell.

Adding compost worms to compost bins can also help to aerate the organic material. Composting with worms produces less heat and can take longer, but the product is regarded as more desirable.

## Building a good compost heap

First, choose a shady spot in the garden for your compost bin, enclosure or heap. Too much sun will dry out your compost. Then set up a separate bin in the kitchen for food scraps.

To make good compost quickly, your compost needs **food, air** and **water**.

### Food

Feed your compost with a mix of 'greens' and 'browns'.

Greens	Browns - dry materials
<ul style="list-style-type: none"><li>• Fruit and vegetable scraps</li><li>• Tea leaves and bags</li><li>• Coffee grounds</li><li>• Green leaves</li><li>• Dead flowers</li><li>• Weeds from the garden (not noxious weeds)</li><li>• Blood and bone</li><li>• Fresh horse manure</li></ul>	<ul style="list-style-type: none"><li>• Straw</li><li>• Dry brown seedless weeds</li><li>• Autumn leaves</li><li>• Ash</li><li>• Dolomite</li><li>• Wood chips</li><li>• Sawdust</li><li>• Shredded newspaper</li></ul>

Add the greens, browns and shredded paper to the heap in layers. As the billions of microbes multiply and digest the organic waste, they produce heat. Layering your food scraps keeps the mix aerated and builds heat which speeds up the process.

It is not recommended that you feed your compost with:

- Animal fat
- Animal manures, especially pet droppings
- Bread or cake (as may attract mice)
- Bones
- Diseased plants
- Large branches
- Magazines
- Meat and dairy products
- Metals, plastics, glass.
- Sawdust from treated timber
- Weeds that have seeds or underground stems. (If you want to put noxious weeds in the mix, place the weeds in a plastic bag for a week or so to kill them first)

### Air

Make sure that your pile has enough air by:

- Turning the pile regularly by breaking it apart then piling it back, at least once a week
- Breaking up clumps of food waste
- Punching holes in the container or inserting a slotted pipe in the heap. The pipe will help to bring air into the centre of the heap
- Putting twigs and newspaper in the mix to increase airspaces
- Adding some compost worms (you'll need about 2,000 to start)
- Don't let it become too wet

Compost can be made without air (anaerobically), but decomposition is slow, the pile will smell and it will produce methane, a powerful greenhouse gas. When the pile has enough air, the microbes that decompose the material thrive and produce better, less smelly compost more quickly.

### Water

All living creatures need water, even microbes, so keep your compost as moist as a wet sponge. A dry pile makes composting too slow.

However, if the pile is too wet, the ingredients become heavy and exclude air from the pile, slowing the composting process and creating bad smells.

## **Using Your Compost**

After 4 months or so, when the compost is dark and crumbly, it will be ready to use. Dig it into your garden beds or spread it on top of an established garden as mulch. Always wear gloves when working with compost and take necessary health precautions.

## **Compost Containers and Heaps**

There are many types of home composting containers, including:

- plastic bins with ventilation holes or slits
- plastic bins without ventilation
- metal drums with holes punched in the side and with the base removed
- rotating drum units (tumblers)
- enclosures made from timber (planks or sleepers), bricks or chicken wire.

If you prefer, you can also make compost in open heaps, but they should be covered with either a plastic sheet or some Hessian to prevent the heap from drying out in hot weather.

## **Composting methods**

### **The Layering Method (Slow and Cool)**

Add a mixture of materials. Try to add alternate 10 cm layers of vegetable and fruit scraps, grass clippings and leaves and shredded newspaper.

Cover each layer with a thin layer of soil and a handful of fertiliser, such as blood and bone.

Keep moist, but not too wet. Compost should be as wet as a damp sponge. The compost should be ready in 3 to 6 months. Breakdown will be speeded up if the heap is turned weekly.

### **The 'All In Together' Method (Fast and Hot)**

Store enough food and garden waste to make a heap of about one cubic metre.

Add to a bin or a tumbler, or form into a heap with some fertiliser.

Turn several times a week. The heap will generate a great deal of heat as the rate of breakdown is very high. The compost should be ready in 3 to 6 weeks.

### **The Compost Worm Method (Moderately Fast and Cool)**

Build the heap slowly as for the layering method, but add some compost worms (special worms that thrive in compost) to the bin. Start with about 2,000 worms.

Keep the heap well watered, but not too wet. Turning is not necessary as the worms will turn the heap for you. The completed compost should be ready in about three months.

Worms do not survive in temperatures above 30°C so keep the bin in the shade. There is some doubt about whether worms are capable of killing weeds and diseases, as they might digest some weeds and ignore others. Worms do not digest seeds but love cardboard. More research in this area is needed.

Note: There is a lot of variation in printed materials about how to compost. This sheet provides information about what is believed to be commonly accepted practices.

## Health Precautions with Compost

Compost is produced from natural materials and contains a variety of living organisms. On rare occasions, these organisms have been associated with illness and allergies in humans. For health reasons, it is very important to take the following health precautions when handling compost:

- Wash your hands after handling compost or soil materials
- Protect broken skin by wearing gloves
- Avoid confined spaces for handling compost or soil materials
- Keep compost moist to prevent spores or bacteria from becoming airborne
- Gently moisten dry compost to allow dust-free handling. Avoid inhalation of dry compost.

For individuals who have allergies to the fungal spores in compost or depressed immune systems, it may be necessary to wear a face mask when working with dry compost. Severely affected individuals may have to avoid contact with compost altogether. Elderly gardeners should be especially careful when working with compost.

## Fixing composting problems

### “My compost pile smells bad!”

- If the pile smells like sulphur (rotten eggs), it is too wet. Mix in dry ingredients, such as soil, dried leaves and shredded newspaper.
- If the pile smells like ammonia (acidic), it has too much nitrogen from too much green waste. Add materials containing carbon, such as ash, dolomite, sawdust or newspaper.
- If the pile still smells bad, turn the pile to push air through the heap, which will help with the immediate odour problems. Also mix in materials that do not compact, such as green twigs and plant stems. These will help to create more air spaces.

### “My compost pile won’t heat up.”

- Check the moisture level of the pile. It should be about as moist as a well-wrung sponge.
- Add high nitrogen materials (e.g. fresh grass or vegetable scraps or blood and bone).
- Increase the size of your pile. The pile should be at least 1 m<sup>3</sup> in size. Smaller heaps will not heat up.

### “My compost pile attracts animals and flies.”

- Most flies in a compost heap are small, harmless vinegar flies that actually indicate that your compost is working properly. However, if dogs, cats, rodents or blowflies are attracted to your pile, it is usually because unsuitable materials have been added. They may also be attracted to the warmth of the pile.
- Do not add meat, fish, bones, dairy products or oily or greasy food.
- Cover each addition of food with a layer of soil.
- Turn the pile regularly to keep the speed up the composting process.
- Place the bin on a layer of wire mesh.
- Set rodent traps around the bin.

### “My compost pile attracts ants and is dry to touch.”

- The pile may be drying out, which is especially likely to happen in Australian summers! Gently moisten the pile, adding water until it is as wet as a wrung-out sponge and add moisture-rich ingredients.

### “My compost pile takes too long to break down.”

- The pile might be too dry. Moisten the pile with water until it is as wet as a wrung-out sponge.
- The pile might not have the right mixture of 'browns' and 'greens'. Add moisture-rich and nitrogen-rich fruit and vegetable scraps to speed up the process.
- The pile might not have enough air. Turn the pile to push air through the heap. Mix in materials that do not compact, such as green twigs and plant stems. These will help to create more air spaces.