

# Growing Your Own Food at Home in Salisbury Series

## Pack F Notes 1 COMPOSTING



**Compost** is a miracle of nature, the result of millions of microbes feeding on organic matter and breaking it down. The organic matter is “worked” and reworked until it is very hard to break down any further. This results in rich, black, earthy smelling humus (humates). You can no longer tell what the individual bits (sticks, leaves, weeds etc.) that made it are. This is the aim of composting.



Complete compost

**Organic matter** is anything that was once living. Kitchen scraps and wet garden waste (e.g. outer leaves of cabbage, lettuce etc.) often go into the bin and then to landfill, where its breakdown produces methane- a potent greenhouse gas. Other green waste from the garden goes in the bin to be composted commercially.

It is better for your pocket, for your garden and for the environment to reuse organic matter locally, at home. Composting and worm farms do this.

**Composting** is the breakdown of organic (once living) matter by microbes-mainly bacteria and fungi. Composts that are turned regularly and have the right airflow and moisture levels will heat up, speeding up the whole process. This is aerobic (with oxygen) or hot composting. Composts with reduced airflow still break down but more slowly. This is anaerobic or cold composting.

Composting can be done in many ways in

- Constructed bays (or long open rows commercially) where it is turned and moistened regularly until “finished”. Called aerobic (with oxygen) or hot composting
- Compost tumblers, drums that can be rotated or turned end on end. Usually aerobic
- Plastic bins with devices that allow air flow such as perforated tubes. Usually aerobic
- Plastic bins some with holes or without holes (Geddye Bins) where the composting process is slower, usually cold or anaerobic (without oxygen) composting
- Piles or heaps usually cold composting, a mulch heap. Anaerobic.



Vermin proof enclosed bay compost. Aerobic

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Different types of compost bins. From left: tumbler, plastic bins, Aerobin, Geddyes bin

### Composting materials

A balance of wet and dry materials will usually provide a balance of carbon and nitrogen, the two nutrients most important for the microbe populations to multiply explosively and break down the organic matter. Too wet and the compost becomes smelly and sour. Too dry and nothing happens. Compost needs to be damp not soggy. Air must get in and out.

- **Carbon** brown/yellow dry materials- sticks and prunings, wood chips, sawdust, paper, straw, dried leaves, dried weeds (without seeds) and dry lawn clippings
- **Nitrogen** green moist materials from fresh herbivore manure (horse, green lawn clippings, kitchen scraps, blood and bone, poultry manure, urine. Nitrogen is tied up in living organisms
- **Phosphorus** from poultry manures, bone and rock dust

Particle size affects composting time. Chop or shred material, if necessary, especially for tumbler or aerobic bins. Smaller particles break down readily if air can penetrate.

Keep weed seeds and diseased plants out of the compost. Put them in the green waste bin instead.

Keep the compost moist- damp but not soggy. "Dry" materials will need to be moistened to the level of a damp sponge.



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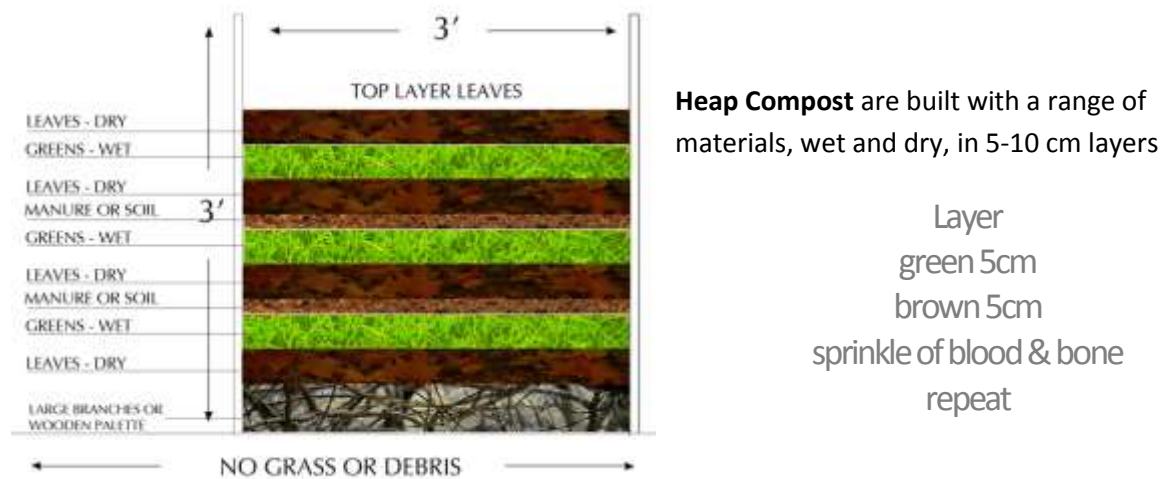


### Basic compost recipe

Ideally each compost is made from a variety of materials and regardless of whether it is made in one go or over months, making a compost adding materials in alternating layers of dry then wet, will give better results as the microbes that are doing the decomposing need right balance of food. Examples are:

1. **Dry materials: straw, leaves, dry weeds, shredded paper**
2. **Wet materials: food scraps, weeds, lawn clippings, manures**

Many home-made compost end up low in Nitrogen, which you can remedy by adding nitrogen sources such as blood and bone, chicken manure/pellets. Also small amounts of compost/soil/herbal activators - comfrey and yarrow, as they do in biodynamic framing practices, may help speed up the process.



<https://pinetreegardenseeds.wordpress.com/2014/03/03/composting-everything-you-needed-and-wanted-to-know-pinetre-garden-seeds/>

### Aerobic heap compost

These are large composts compiled of a range of materials, wet and dry, in 5-10 cm layers. They are left to heat up then turned, and will be ready in approximately 2months.

- Start with a 10 cm layer of dry materials, then alternate 5 cm layers of wet and dry
- Second layer is usually fresh horse manure or lawn clippings
- Moisten the dry layers as you add them otherwise they will stay dry once the heap is made and cannot be moistened without turning the heap
- Aim for a volume of one cubic metre or more
- Do not add lime, dolomite or ash. A light sprinkle of soil (2 teaspoons is enough) and rock dust can be applied to each layer
- Cover the heap with mulch, straw, shade cloth or other material that will stop it drying out. As the compost heats up it will give off steam. It will heat up rapidly over the next two days. If not it may be too dry/wet or have insufficient nitrogen or microbes
- Allow heap to heat up 7-10 days then turn and re-moisten if necessary (damp not soggy)
- Turn weekly, three to four times, ready in 6-10 weeks. By then the materials used should be broken down to dark, "sweet" humus. This is black right through, where you can no longer tell what the original materials were made of.

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### Composting in plastic bins

For many backyards composting in an enclosed bin provides enough compost, is tidier and easier to keep out vermin. There are many on the market. Two bins are recommended as one is left to finish decomposing whilst the other is filled. Locate them in an easy to access location both so you put material in them, and can empty them easily.

As the process is cold it is slower and may take 6-9 months to be ready. A compost screw or worms can speed this up. With bird wire under the base and sunk into the soil 2-3 cm the closed bins are vermin proof (rats, mice, flies, cockroaches).

A bin can be harvested while you are still filling it if the materials down the bottom have broken down to humus. The bottom is levered up with a fork or spade and supported with a brick. You can then scoop out any finished compost.

**Tumblers** need well shredded damp materials in even amounts of wet and dry. They should be turned once or twice a week. The compost is ready in 6-10 weeks.

**Aerobic plastic bins** The plastic bins with aeration need well shredded materials added in even amounts of wet and dry to work well. Some types have too many aeration holes for our hot, dry climate. They dry out easily and then don't work well. You can cover the holes if there are too many.

**Anaerobic compost** is made in a closed bin (Gedye) or heap and is useful for people who can't turn a tumbler. Materials can be added gradually. It is still best to layer, wet/dry if you can. The layers can be thinner e.g. 5 cm. For each addition of kitchen scraps add a little shredded newspaper.

- If it goes sour add shredded newspaper.
- If it dries out, sprinkle with water.

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### Anaerobic compost bins

The same layering process can be used in the anaerobic compost bins with a compost screw or compost worms used to do the turning process. The breakdown period will be longer, 12 weeks or more. These bins can also be used to add regular smaller amounts of materials such as food scraps as they are generated at home. If this becomes too wet it may become "sour". Aerate and add some dry material such as shredded paper or sawdust. Adding compost worms may also prevent "souring".

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### Worms and composting

Adding worms speeds up the composting process in bins and heaps and improves quality, with their castings. Both the regional earthworm and bought in compost worms will assist the microbes in decomposing the materials into a rich fertiliser.

Earthworm will be moving around deep in the soil, and will come into any cool composting heap or bin on the ground to eat the organic matter, when the conditions are right. As they move around the heap and back into the soil below they help aerate both, and fertilise the soil. You can transfer earth worms for other parts of your garden.

Compost worms come from regions more tropical with constant moisture, and live in leaf litter, where they help decompose the organic material. They are a few species that are helpful for compost, the red tiger is easily purchased as they also used as fishing bait. Add in enclosed bins once they are over half full. Summer temperature will kill them so make sure enclosed composting bins are shaded from summer sun.

### Using Compost

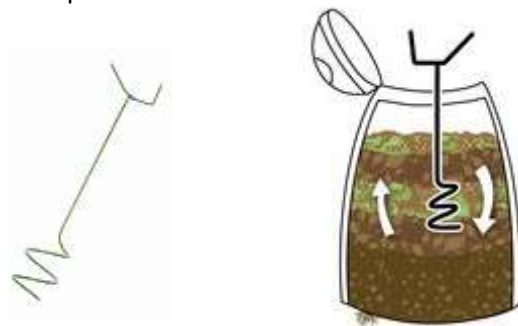
If it smells, leave it. It's not ready  
Don't dig compost in. Place it on top and lightly mulch over

Healthy soil is living; it can have 100 million to 1 billion bacteria and tens to hundreds of metres of fungal filaments per teaspoon of soil. These soil microbes multiply and die rapidly. Many are eaten by other soil microbes or even worms. Most bacteria live for 20 to 30 minutes! Whilst alive many help feed plants converting nutrients to soluble forms for plants. Some are known for "fixing" nitrogen an important plant nutrient, adding it to the soil. Others help keep conditions around plant roots optimal (just right). Most plants feed bacteria and fungi, through their roots, with sugars and other foods to promote the microbes that suit them. Drying out, water logging, adding large doses of soluble fertilisers and digging in organic matter that has not broken down to humus can upset this.

Compost is living. Humus provides habitat, hidey holes and spaces for bacteria and fungi. These bacteria and fungi, in rich earthy smelling compost are good for the soil. Humus stores water, lots of it, many times its own volume. This water can be released gradually to microbes and plants. Humus also stores minerals (plant nutrients) making them available to microbes and plants.

**Use compost** as fertiliser not mulch. It is the best fertiliser for most soils. Dig in to top 5cm or apply to surface of soil and cover with mulch. It is full of living organisms that prefer to be in the upper layers of the soil. Aerated compost teas can be used to combat pathogens both in soil and on plant surfaces.

Compost screw



<http://selfseed.weebly.com/compost-connection-home-visit.html>

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Notes by Harry Harrison for Grow Your Own Food Gardening Workshops, 2014

compiled by Shannan Davis,  
Garden Coordinator  
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