



Hot Composting Guide

Written by Annie Wilson, from notes taken at an Elaine Ingham talk

Making compost using the hot method is the only sure way of killing human and plant pathogens that can exist in all forms of manure and any raw material that may have been contaminated by chemicals etc.,

The exception to this is a lawn grass treatment called Clopyrallid (a broadleaf herbicide), which persists through the hot composting treatment. Therefore grass clippings, while a valuable high nitrogen addition, must be carefully documented.

Ingredients should be fresh.

If you start with materials that have already become anaerobic (breaking down without oxygen present and therefore sludgy), this will probably persist throughout the process.

All ingredients should ideally be assembled before making the whole pile in one go.

HEAT

Heat in a compost pile can be generated in many ways, but the addition of a high-nitrogen material is the most effective. These are listed below.

The main ingredient in the compost pile should be a high carbon material from an untreated source. See below.

HIGH CARBON INGREDIENTS

- Wood chips (Macrocarpa and Eucalyptus are very slow to break down)
- Sawdust (from untreated wood only)
- Paper
- Straw
- Hay
- Dried leaves, Corn stalks.

HIGH NITROGEN INGREDIENTS

- Fresh chicken or cow manure
- Green legume plants – fresh clover
- Lawn clippings
- Weeds
- Kitchen waste

RATIOS

Tree crops need fungally-dominated compost, so by volume 55%+ high carbon ingredients are needed to start the pile.

Vegetable crops need a bacterially-dominated compost, so 30% high nitrogen ingredients are needed in a pile to start.

SIZE MATTERS

The size of the pile is important: over 2.4m high and you risk not having enough oxygen available. Too small and not enough heat will be generated.

The pile should be kept to a size that can easily be turned, either with a tractor bucket, or by hand with a pitchfork. The important thing is that in turning the pile, oxygen is incorporated – the vital food for the micro-organisms that you want to encourage in your compost.

The particle size is also important - 10% should be greater than 25mls in diameter. This makes for spaces in the compost, where oxygen is.

MOISTURE

Watering the pile initially (a good soak) is a good way to kick start the decomposition process and encourage good microbial growth.

It is also wise to cover the pile, thus retaining heat for longer. It also stops moisture loss in dry periods and drenching in heavy rain.

TEMPERATURE

The temperature of the pile should be taken with a thermometer long enough to reach the middle of the pile. Beer brewing, cheese-making thermometers are generally a good length. Insert the thermometer and wait 2-3 minutes for an accurate reading. Record the temperature.

56° centigrade not only kills pathogens but also nematodes and weed seeds. It needs to be maintained in the centre of the pile for 3 days, so continue to read and record the temperature each day. It is important to turn the pile after that and make sure that the temp. reaches 56° again for three more days. This ensures that all of the pile, not just the centre has reached the desired temperature.

If 56° centigrade cannot be reached, then more nitrogenous material must be added. The temperature should be reached fairly quickly after assembling the pile - 2-4 days generally.

Temperature should not go above 70°C or micro-organisms will be killed.

These temperatures should be recorded in a chart for each pile that is made, for a year. It teaches you how hot to the hand 56° centigrade feels.

Be careful not to break the thermometer in the pile, or any where near it – mercury contaminated compost is a very dangerous thing!

By this observation you will learn when the pile is hot enough and when it should be turned.

MATURITY

As a general rule a pile should be turned at least three times in the first month. Bear in mind that too much turning will damage the fungi and bacteria present.

Good active compost can be ready to use in 30 days, if temperature has been reached.

It should be brown in colour, smell earthy and sweet and be reasonably moist (a single drop of moisture squeezed from a handful of compost). A putrid smell, or a vinegary smell both indicate anaerobic activity, at which point the pile should be turned and have more material incorporated into it. Flies are a bad indicator.

The addition of humanure into a composting system intended for use in food production is expressly forbidden.

For testing of compost refer to BioGro standards.

Reference: <http://www.elaineingham.com/>

Example: Hot Compost Diary

Date	Recorded Temperature	Action
	Eg. This needs to be recorded daily, until maturity	Eg. List all ingredients added, note when heap has been turned, watering, covering