

## HOT COMPOSTING

A hot pile will generate enough heat during decomposition to kill weed seeds and plant diseases if all parts of the pile heat up to sustained temperatures of at least 135°F.

### Benefits of composting

Composting is a satisfying way to turn fruit, vegetable and yard trimmings into a valuable soil conditioner for your garden. When you compost you divert yard and garden waste from the waste stream and help extend the life of our landfills. The benefits of composting include:

- Composting reduces the environmental and economic impacts of landfills and turns this "waste" into a valuable resource.
- Composting returns valuable organic matter and nutrients to the soil, enriching soil with nitrogen, sulfur, calcium, magnesium, potassium and micronutrients. This reduces our reliance on synthetic fertilizers which have contaminated our waterways and depleted the organic matter in our soil. Many commercial fertilizers contain toxic metals (arsenic, mercury, lead, dioxin, chromium, cadmium).
- Composting encourages the production of beneficial microorganisms and macroorganisms, which improve soil and plant health, reducing the need for pesticides, fertilizers, herbicides and fungicides.
- Compost conserves water because it dramatically increases the soil's ability to retain moisture. Compost can retain 100% of its weight in water and is an important component of gardening in a drought.
- Compost reduces erosion and runoff by reducing compaction and increasing the permeability of heavy soils.
- Composting is free and very satisfying! It is nature's way of recycling and returning valuable organic matter and nutrients to the soil to be used again.
- The heat generated during hot composting can be used in many creative ways—such as making hot beds to germinate seeds outdoors or propagate plants, adding heat to a greenhouse coming from perforated pipe in the center of the pile, keeping compost worms in or around your pile warm, happy and productive in winter. Your imagination is the limit!

- Locate your bin or pile close to a water source.
- You will need equal parts (volumes) of greens and browns. You may also use 2 parts greens to 1 part browns.
- Gather enough green and brown material to FILL a bin or pile with a MINIMUM size of 3' x 3' x 3'. A smaller pile will dry out easily and cannot retain the heat needed for fast composting without insulation such as straw bales. *A larger pile of 5' x 5' x 5' is more efficient because it provides room for a larger area to heat up in the center.* However, you need to gather a much larger volume of greens and browns to make a pile that large.
- Fill your bin using equal volumes of greens and browns—for example: 5 wheelbarrows of greens and 5 wheelbarrows browns OR equivalent such as a truckload of horse manure with stall bedding or fall leaves mixed in.
- You can make a bin out of many materials—from inexpensive wire fencing to free wood pallets tied together. A bin that is stackable or can be easily disassembled is more convenient for ease of turning as well as for the flexibility of being able to make compost in a different location each time. Or use no container at all and just make a large pile.
- Before mixing your greens and browns, shred or chop coarse or woody browns to expose more surface area for microbial populations to work on. Woody material can be put through a grinder or shredder, though chopping with pruning shears or a sharp shovel is also effective. You can shred fallen leaves with a lawn mower or chop them up with a weed whacker in a garbage can (wear safety glasses!) Even bruising or cutting plant materials will speed decomposition. Hard or woody tissues decompose best if particles are reduced to 1/2" to 1-1/2" inches in size.
- Start building your pile with a 4" to 6" base layer of coarser browns such as twigs to help air circulate from the bottom. Moisten this layer.
- Add a 4" to 6" layer of green materials. If your greens are not very fresh, add nitrogen-rich greens such as vegetative food scraps, used coffee grounds, unmatted grass, urine or poultry, cow or horse manure. If you do not have enough greens, alfalfa hay, pellets or fines are an inexpensive source of nitrogen. Moisten and mix the green and brown layers together.
- Add alternating layers of greens and browns, mixing them together and sprinkling with water as you go.
- Continue alternating and mixing layers of greens and browns, moistening to keep the material damp like a wrung-out sponge throughout. Keep it moist, but not wet. Beneficial organisms cannot survive in soggy conditions. Make sure there is plenty of air in your pile and that the ingredients do not become compacted. Matted materials exclude the oxygen necessary for rapid decomposition. Some green items such as grass clippings tend to mat if not mixed thoroughly with other material.
- Add a final top layer of brown materials or aged compost.
- Close the lid or cover your pile to make sure it does not get too dry in summer or too wet in winter.
- Monitor the temperature of the interior of the pile using a thermometer with a 6" to 12" probe, a digital turkey thermometer or a regular meat thermometer buried in the middle of the pile (with a piece of string attached for easy retrieval). The temperature should begin to rise within 2 to 3 days and peak at 120°F to 155°F within 4 to 7 days. *Peaking too quickly or reaching temperatures over 155°F indicates you have too many greens, which can reduce the quality of the finished compost.*
- Turn the pile after the temperature has peaked and is starting to decline. If you do not have a thermometer, turn the pile after it has heated up for several days and the temperature seems to be declining. The objective of turning is to move materials from the outer (cooler) edges of the pile to the base and center of the pile where it will heat up and decompose more effectively, killing pathogens and weed seeds. When turning, sprinkle with water if needed to keep your pile uniformly damp like a wrung-out sponge. Rapid decomposition can be detected by a pleasant odor, by vapor given off when you turn the compost, by the growth of white fungi in your pile. The pile will reduce in volume as the materials become less recognizable and eventually change to a dark brown color.
- Continue monitoring and turn the pile each time the temperature has peaked and is declining or if the temperature goes over 155°F. It is helpful to chart the progress of your compost and a fun way to get kids involved in composting.
- Harvest and use the compost when your pile no longer heats up significantly after you turn it. The organic materials will no longer be distinguishable, the volume will be significantly reduced and you should have dark brown, sweet-smelling compost.