

## **Composting: Nature's Way to Rejuvenate the Land**

With very little investment, we can produce a valuable commodity from household garbage. If you wanted to pick one activity to demonstrate recycling, perhaps the most poignant example is composting. In nature, leaves, trees, fruits, sticks, animal carcasses and feces fall on the ground to be decomposed by soil organisms. This community of creatures ranges from earthworms, centipedes, and symphylans, to microscopic protozoans, nematodes, fungi, and bacteria.

The processes they use to break down tissues as they grow and reproduce are physical and biochemical, working with mouthparts, digestive bacteria, or secreted enzymes. The activities of the soil food web create healthy, living soil that provides the best environment for growing plant roots. We can take advantage of these processes and make compost from our food waste, shredded paper, leaves and yard debris.

### **Why Compost?**

1. Economics and logistics: 60 % of domestic waste is organic matter, most of which could be composted on site. Save space in the landfill. Recycle organic matter into compost in a few weeks to two years depending on method.
2. For diversity and health of the ecosystem and a beautiful garden: feed the soil food web. Decomposing organic matter feeds micro-arthropods and earthworms, protozoa, fungi and bacteria. This cycle releases nutrients in compost that supply the complete needs of garden flowers, vegetables, trees, and shrubs.
3. Give the soil what it needs without using expensive, oil-based synthetic fertilizers. Eliminate the need for synthetic fertilizers, made from petroleum by energy expensive processes. Synthetic fertilizers do not feed the soil food web.
4. Reduce irrigation needs by encouraging deep roots: topdress a garden with one inch of compost to improve soil texture and contribute to microbial activity down to one foot deep in 6 months, 18 inches in a year.
5. Leaves left at the curb can pollute streams and lakes as they decompose. Avoid this by placing a compost pile where nutrients will be used by plants, not leached into the watershed. Or, use composted leaves as mulch in the landscape to replace purchased wood fiber mulch.
6. Reduce your carbon footprint: work at reducing the amount of mowed lawn with new gardens with native plants, flowers, mulched areas, paths or a meadow. Two-cycle gas engines are serious sources of pollution of air and water. If you set the mower blade at 2.5 to 3 inches, you can mow less often and still follow the one third rule for the health of the grass plant: take off no more than 1/3 of the plant at any mowing.

### **What do you put in a compost pile?**

Household organic matter includes vegetable scraps, egg shells, corn cobs, orange peels, tissues, shredded office paper, dead indoor plants and soil, coffee grounds and filters, tea bags, paper towels. (Do not put meat and fat or pet feces in your regular compost pile; however such things, or special circumstances like a dead pet, could be buried 2 ft deep if you have the space to allocate where you won't see them again.)

Yard waste suitable for composting includes small twigs, leaves, pulled weeds, spent blooms, crop trimmings, container plants and potting soil. Bury any diseased or infested plant matter under the surface of the pile where microbes will decompose the pathogens along with the plant parts. Grass clippings can be raked and composted, but if left on the lawn, will supply all the nitrogen the grass needs. Avoid placing noxious weed seeds in a cold compost pile.

### **How can I start composting?**

Vermiculture: A worm-based composting system could be a dishpan or 5 gallon bucket under the kitchen sink, in the mud room or porch with 100 red wiggler worms from a bait shop. If you don't over feed the worms, there will be no odor or fruit flies. Provide bedding of shredded paper and peat (details not provided here).

Trench in city yard: The compost pile could be a dug trench gradually refilled with household organic matter and leaves. Place leaves or soil on top, and your neighbors will never know you are composting.

Sheet composting: Select the site of a future garden: Provide aeration by placing woody sticks, the last season's dead annuals, etc. directly on soil, then layer alternating household organic matter and leaves or straw.

On top of perennial weeds or sod, set down sheets of cardboard and lay down layers of organic matter. The standard composting goal is "50% brown and 50% green", for balanced carbon to nitrogen ratio. This is achieved by layering dry hardwood leaves or straw as a rich carbon source (brown) and grass clippings, pulled weeds, vegetable trimmings or fruit pommace as a nitrogen source (green).

\*Speed up the composting process by adding manure at any stage or ask some boys to pee on the pile.

\*Sheet composting established in the fall can be used as a garden site by late spring.

### **Hot composting is more trouble**

Build (or buy) a 3 x 3 ft or 4 x 4 ft container with metal wire or plastic fencing, or wooden boards or pallets. An ideal setup has two or three bins, with space for maturing compost and for the new pile.

Recipe: Fill the bins with alternating layers of hardwood leaves and alfalfa meal from a feed store. Water the pile, and turn once a week for rapid results. Use 50 lb of alfalfa meal to 3 cubic yards of dry leaves.

The heat is a by-product of microbes decomposing the carbon in leaves in an oxidative process to generate the energy currency of the cell, ATP. Nutrients from the alfalfa meal are taken up into the bacterial and fungal cells to make macromolecules such as enzymes and DNA. When the organisms die, nutrients are absorbed by decomposers. Plant roots can take up from compost all the minerals required for growth.

\* Do not let anyone take away your leaves if you have any trees in your yard - you need them for compost. The compost will make natural mulch for the trees, retaining moisture in the soil, and releasing nutrients slowly as the decomposers cycle.

### **When and how do I use the compost?**

Wait until a hot compost pile has finished decomposition: Allow for a cool down resting period before applying compost to young plants.

Mulch for trees and shrubs: Compost is the ideal topdressing for trees, shrubs and perennials, as a source of nutrients for plants and to rejuvenate soil microbial activity. It can be applied at any time of the year, but spring is the most important time.

Soil amendment: At planting time, spread two inches of compost onto the garden soil and mix in. Compost from a slow, cool pile may contain some coarse material such as corn cobs that can be thrown back into the compost pile to work again, or simply bury the works in the soil of the garden to continue decomposition below ground.

Feed the soil food web: Usually the compost is at its best nutritionally between 6 months and a year old. This active compost may suppress many plant diseases.

Potting soil: Screened finished compost is appropriate for inclusion in a potting soil mix. However, it may not work as well as a commercial germination medium for seeds unless pasteurized first (heated to 135°F). Test on a small scale for best results.

Prevent contamination of compost with weeds: It is best to cover a compost pile with a tarp or piece of old carpet to keep out weed seeds that might blow in.

When we make compost, we cultivate the diversity of life in our own backyards. We can set priorities so that our activities create a habitat instead of a sterile environment

Written by Jana Lamboy, edited by Rochelle Smith, Department of Environmental Conservation and Horticulture at Finger Lakes Community College, 3/17/2008