

COMPOSTING

AT HOME

Start to Finish

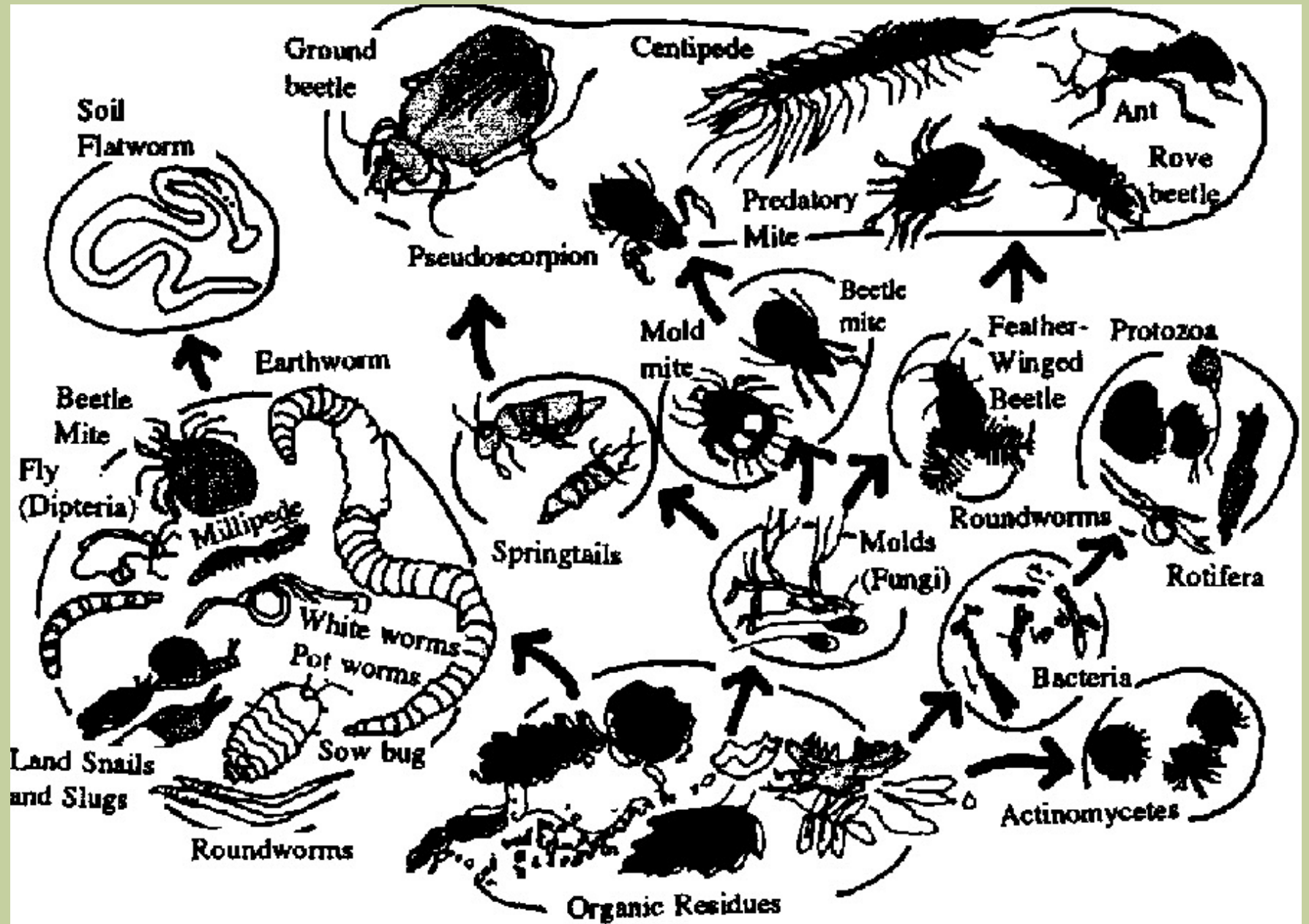




What is Composting?

All organic matter decomposes over time.

Composting is the acceleration of that natural decay process. It is the controlled microbial decomposition of organic matter, such as food and yard wastes, by bacteria and other microorganisms, in the presence of oxygen and water.



Clarification of Terms:

Organic

- ❖ *Organic* refers to matter that is alive or once was alive: an apple is organic, a dried-up leaf is organic.
- ❖ The word *organic* is often used as a descriptor of growing and farming practices, and many people look for organically grown produce. Don't let that confuse you. Composting your organics does not mean you can only use organically grown produce.
- ❖ In your kitchen, *organics* is synonymous with food scraps, also called food waste. Some organics are not suitable for a home composting system, but almost all kitchen food scraps can be accepted in food waste programs where the destination is a commercial composting facility.

Clarification of Terms:

Compost

- ❖ *Compost* is the result of the decomposition of organic matter. It is a soil amendment and has many benefits.
- ❖ *Composting* is used to describe your work in the backyard turning organics into the finished product called compost.
- ❖ *Commercial composting facilities* use high heat, mechanical aeration, and constant management to ensure a marketable end product.
- ❖ *Worm composting* or vermiculture is the process of turning organics into compost by harnessing the power of worms in an enclosed system.

Why Add Compost to Soil?

- ✓ Adds organic nutrients to soil, which become available to plants over time.
- ✓ Is an excellent amendment to improve soil structure, aeration and drainage.
- ✓ Makes plants more able to resist disease.
- ✓ Holds moisture
- ✓ Prevents erosion
- ✓ Balances pH of your soil
- ✓ Attracts worms
- ✓ Decreases garden and kitchen waste going to the landfill or waste stream.

What to Consider for Your Home Composting Project?

- ❖ Site: well drained, preferably sunny location
- ❖ Container choice: (indoor countertop organics bin and an outdoor composting system)
- ❖ Outdoor tools: shovel, pitchfork, thermometer
- ❖ Outdoor tools if adding yard waste pile: sharp machete like knife or a chipper
- ❖ Yard waste as separate pile to avoid need for chopping
- ❖ Ingredient stock-pile (for leaves, straw, wood chips, etc)
- ❖ The science behind decomposition

Indoor Organics Collection: Kitchen Food Waste

- ❖ Know the organics suitable for your system of home composting (e.g., no oil, meat, etc.)
- ❖ Choose an indoor countertop bin suitable for your needs (e.g., amount of food waste); many available on the market
- ❖ Keep countertop bin close to food prep area for easy access
- ❖ Empty regularly in outdoor composting area

What Goes In?



Kitchen Food Waste for Home Composting

- ❖ Fruit and vegetable scraps (including skins, pits*, stems)
- ❖ Coffee grounds (OK in paper filters) and tea bags (OK in paper tea bags, but not silk bags)
- ❖ Egg shells*
- ❖ Paper towels, paper napkins (look for unbleached variety)*
- ❖ For questions about what can be composted (e.g., an olive in brine/vinegar), consult websites like *Can I Compost This?*

Kitchen Food Waste NOT for Home Composting

- ❖ Oils and dressings – even when on fruits and vegetables
- ❖ Dairy
- ❖ Meat and fish, including bones and trimmings



Outdoor Organics Collection: Yard Waste

- ❖ Add hedge trimmings, grass clippings, leaves, branches, yard waste, except don't add to your kitchen scraps, if you treat your lawn with chemicals.
- ❖ Adding a wider range of yard waste will give nutrient variety.
- ❖ Adding some manure is OK.
- ❖ AVOID walnut tree leaves, nuts, and branches.
- ❖ AVOID weeds unless you maintain a hot compost pile.
- ❖ Chop yard waste into smaller pieces for speedier decomposition.
- ❖ CONSIDER A PILE METHOD to separate your yard waste from food waste. It will eventually decompose but won't slow down the decomposition of your food waste.

Examples of Outdoor Compost Bins

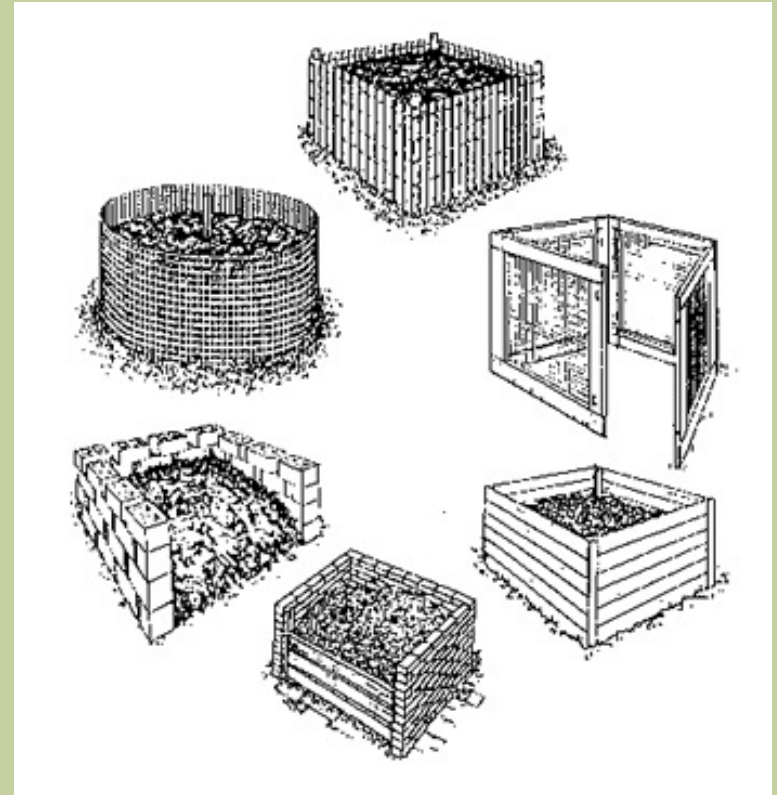
From simple to complex:

Pile Method

Note: Two Pits, Leaf Bin, Pitchfork & Shovel



Cages



Tumbler (Two Compartments Are Best)



Plastic Bottomless Bin



Small Scale Digesters: Green Cone



Multi-Bin System



Subpod Compost Bin New to the Market



Cost Savings with a Little Resourcefulness



Need to Know:

The Science and How-to of Composting

- ❖ Carbon-containing material at proper ratio
- ❖ Nitrogen-containing material at proper ratio
- ❖ Microorganisms to break down carbon and nitrogen
- ❖ Oxygen (aeration)
- ❖ Moisture
- ❖ Warm temperatures

Carbon:Nitrogen Ratio

(or BROWN to GREEN Ratio)

Composting Needs

Ratio range: 25:1 to 30:1
(in weight)

- ❑ Carbon (Brown): dried leaves, straw, wood chips
- ❑ Nitrogen (Green): kitchen waste, grass clippings
- ❑ FINAL BLEND:
2/3 BROWN, 1/3 GREEN

Sources for Balancing

ORGANIC MATTER	C:N Ratio
Spruce sawdust	600:1
Paper	150-200:1
Dry autumn leaves	50-80:1
Green spring leaves	30-50:1
Grass clippings	25-40:1
Food Waste	14-16:1
Cow manure	11-30:1

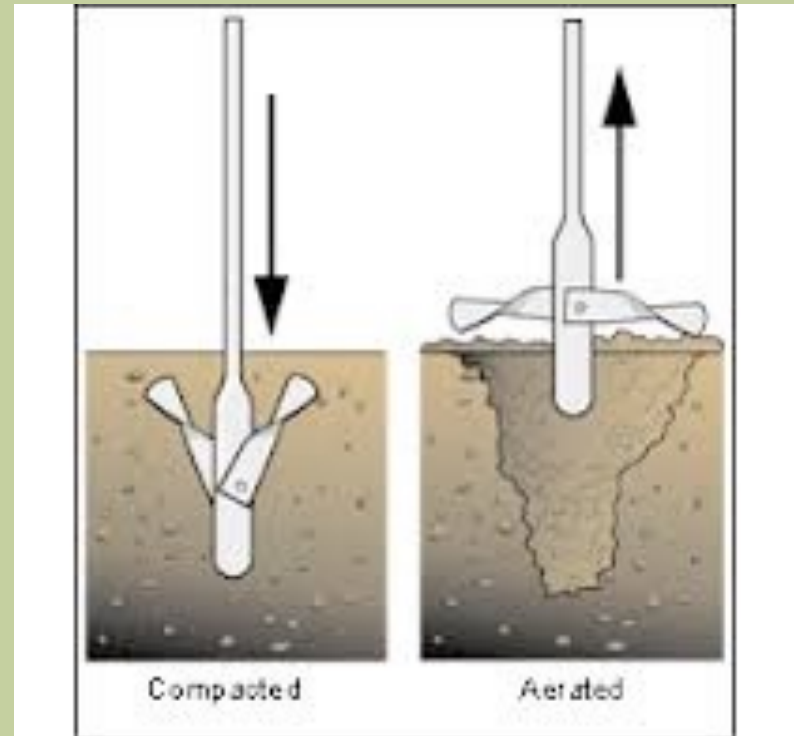
Tip: Stockpile Carbon Rich (Brown) Material



- ❖ When adding kitchen scraps to your compost bin or pile, cover with a layer of brown material to deter pests and abate odors.
- ❖ Turn to aerate before the next addition of kitchen scraps.
- ❖ Layer again with leaves or other brown stuff.

Oxygen and Water

- ❖ Decomposing microorganisms require oxygen & water for survival.
- ❖ Optimally, a pile should be aerated two times a month to provide sufficient oxygen to the center of the pile.
- ❖ Pile should be damp -- not wet -- and should be constructed on well-draining soil. Add water to each layer*
- ❖ Tools: spade or pitchfork or commercial aerating tool like this or auger type



Internal Temperature

- ❖ Ideal temperature for microbial decomposition: between 90° and 125°. Below 90° and decomposition will take place at reduced rates. *
- ❖ Decomposition still takes place in a “cold pile” but it takes much longer.



Other Decomposition Factors

- ❖ Location: sunny best
- ❖ Critical mass: ideal pile is 4 ft x 4ft x 4ft, or anything between 3x3x3 and 5x5x5
- ❖ Coarseness of ingredients: finer carbon and nitrogen feed stock breaks down faster (e.g., sawdust breaks down faster than large wood chips, and a chopped apple faster than a whole one)

Summary: Composting Essentials

- ❖ Proper C:N Ratio
- ❖ Compost activators (presence of microorganisms)*
- ❖ Monitoring dampness of the pile
- ❖ Monitoring of outdoor and interior pile temperatures
- ❖ Frequent aeration (for proper level of oxygen)
- ❖ Helpful considerations: location, size of pile, size of ingredients

Problems or Barriers

Pests

- ❖ Cover with thicker layer of brown, carbon-rich material
- ❖ Add a barrier, such as fencing or other enclosing structure
- ❖ Avoid ingredients attractive to pests

Smell

- ❖ Cover with thicker layer of brown, carbon-rich material
- ❖ Aerate more frequently, and add layer of brown material after aeration
- ❖ Avoid very smelly ingredients

Problems or Barriers, cont.

Not Finishing

- ❖ Add a handful of soil or finished compost
- ❖ Monitor moisture and temperature
- ❖ For plastic bottomless bins, lift entire plastic bin off the pile to let finish and begin anew nearby.

Winter

- ❖ Slow to no microbial activity, but some starting at 28°F.
- ❖ Add layers of leaves or other brown material (if accessible and not frozen)

COMMERCIAL COMPOSTING

Requires municipal program or residential pick-up service.



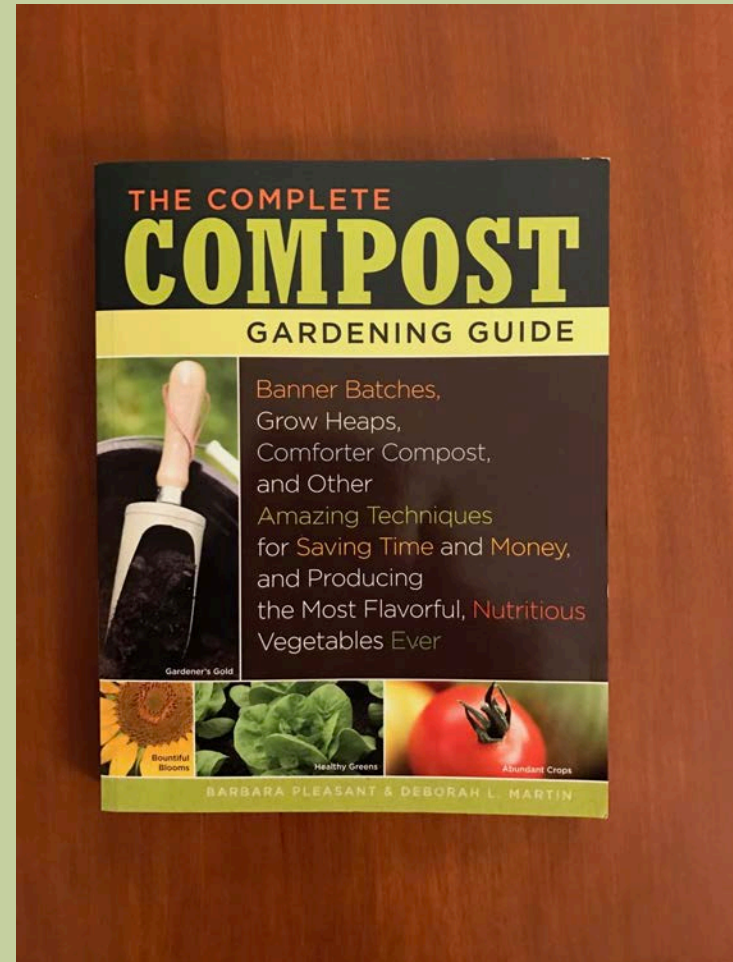
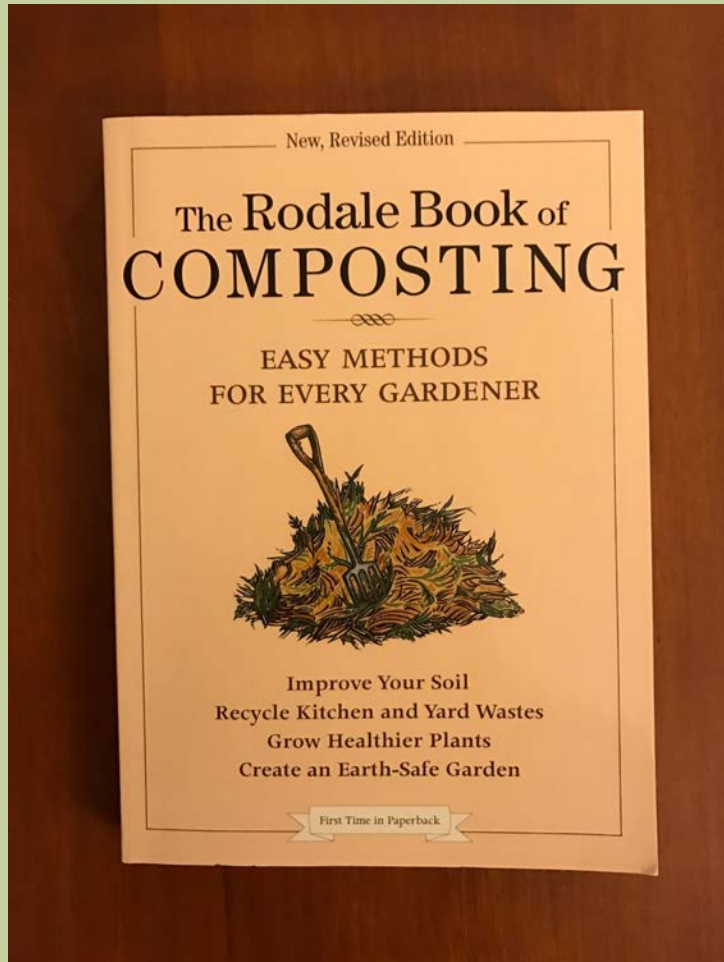
WORM COMPOSTING: Pros and Cons

- ❖ Must procure RED WIGGLER worms; use a reputable supplier
- ❖ Worm bins will likely not handle all of your kitchen organic scraps.
- ❖ Worm bins do not smell (although I've heard one should avoid broccoli and onions).
- ❖ Worm castings make a very rich soil additive, but are highly acidic and salty. Good for many plants, but especially container vegetables and flowers. Don't add more than 20% of soil mix

Note: Online instructions available.



Good References



School Composting



References

- ❖ The Rodale Book of Composting, Deborah L. Martin & Grace Gershuny, Editors (Rodale Press)
- ❖ The Complete Compost Gardening Guide, Barbara Pleasant & Deborah L. Martin (Storey Publ'g)
- ❖ Let it Rot, Stu Campbell (Storey Publ'g 3d edition)
- ❖ Soil & Composting, Nancy J. Ondra (Taylor's Weekend Gardening Guides)
- ❖ <http://www.soiltest.uconn.edu/documents/compostingbasics.pdf>

Useful Sites and Contacts

- ❖ Contact about this presentation: bbettigole@yahoo.com
- ❖ Email: dawn.pettinelli@uconn.edu
- ❖ Blog: www.uconnladybug.wordpress.com
- ❖ Website: www.soiltest.uconn.edu
- ❖ Website: <http://www.compostthis.co.uk/cabbage>
- ❖ Special thanks to Greg Moonie, who taught the Master Composter class, and from whom I borrowed several slides

Happy Composting

