

Town of Harpswell

GUIDE TO HOME COMPOSTING



The following is intended to be an easy to use reference guide to home composting. It is a compilation of the best known methods from multiple sources. It is important to remember that no one way is right, you should try new things and tailor your composting to fit your needs. Home composting is encouraged by the Town as a way to reduce the waste stream and be environmentally friendly.

What is compost?

Compost is a dark, crumbly and earthy smelling form of decomposing organic matter. It can be added to soil to help flowers, plants and trees grow. Food scraps and yard waste currently make up 20-30 percent of what we throw away, and should be composted instead. Making compost keeps these materials out of landfills where they take up space and release methane, a potent greenhouse gas.

Why should I compost?

Composting is the most practical and convenient way to handle your yard wastes. It can be easier and cheaper than bagging these wastes and taking them to the Transfer Station and safer than burning them. Compost improves your soil and the vegetation growing in it. If you have a garden, a lawn, trees, shrubs, or even planter boxes, you have a use for compost. By using compost you return organic matter to the soil in a usable form. Organic matter in the soil improves plant growth by helping break heavy clay soils into a better texture, by adding water and nutrient-holding capacity to sandy soils and by adding essential nutrients to any soil. Improving your soil is the first step toward improving the health of your plants. Healthy plants help clean our air, fight erosion, provide food, conserve our soil and provide beautiful natural spaces to enjoy.

What can I compost?

Anything that was once alive can be composted. A good compost pile is made up of three basic ingredients.

1. Browns- This includes materials such as dead leaves, branches, and twigs.
2. Greens- This includes materials such as grass clippings, vegetable waste, fruit scraps, old plants, and coffee grounds.
3. Water- Having the right amount of water in the mix is important. Your compost piles moisture level should be that of a damp rung out sponge, not too wet and never dry.

Care should be taken when composting certain kitchen scraps. Meat, Bones, and Shells are discouraged, but are compostable. These items are generally composted by what is known as the "Hot vessel Method". (See page 4) This method uses an air tight container to maintain a specific temperature, it reduces odor and discourages animals. This method promotes the growth of anaerobic bacteria which work best to break down proteins in a warm air tight environment. Conventional composting uses aerobic Bacteria in a damp open environment to break down organic materials.

The essentials of composting.

With the following principles in mind, everyone can make excellent use of their organic wastes.

Biology

The compost pile is really a teeming microbial farm. Bacteria start the process of decaying organic matter. They are the first to break down plant tissue and also the most numerous and effective composters. Fungi and protozoans soon join the bacteria, somewhat later in the cycle, centipedes, millipedes, beetles and earthworms do their parts.

Materials

Anything growing in your yard is potential food for these tiny decomposers. Carbon and nitrogen, from the cells of dead plants and dead microbes, fuel their activity. The microorganisms use the carbon in leaves or woodier wastes as an energy source. Nitrogen provides the microbes with the raw element of proteins they need to grow. Everything organic has a ratio of carbon to nitrogen (C:N) in its tissues. These range from 500:1 for sawdust to 15:1 for table scraps. A (C:N) ratio of 30:1 is ideal for the activity of compost microbes in a fast, hot compost pile. A (C:N) of 50:1 is adequate for a slower compost pile.

Surface area

The more surface area the microorganisms have to work on, the faster the materials are decomposed. It's like a block of ice in the sun- slow to melt when it's large, but melting very fast when broken into smaller pieces. Chopping your garden wastes with a shovel or machete, or running them through a shredding machine or lawnmower will speed their composting.

Volume

A large compost pile will insulate itself and hold the heat of microbial activity. Its center will be warmer than its edges. Piles smaller than three feet cubed (27 cu. Ft.) will have trouble holding enough heat, while piles larger than five feet cubed (125 cu. Ft.) don't allow enough air to reach the microbes at the center. These proportions are of importance only if your goal is fast hot compost.

Moisture & Aeration

All life on earth needs a certain amount of water and air to sustain itself. The microbes in the compost pile are no different. They function best when the compost materials are about as moist as a wrung out sponge and are provided with many air passages. Extremes of sun or rain can adversely affect this moisture balance in your pile.

Time & Temperature

The faster the compost pile is working, the hotter the pile. If you use materials with a proper C:N ratio, provide a large amount of surface area with a big enough volume and provide enough moisture and aeration you will have a hot fast compost mix, these lend themselves to a turning unit discussed in the next section. If you want to deal with your yard waste in an inexpensive, easy, nonpolluting way, the holding unit will serve you well.

Choosing & filling your compost bins

Holding Units (See Page 5&6)

These simple containers for yard waste are the least labor and time consuming way to compost.

Which Wastes?

Place the holding unit where it is most convenient. As weeds, grass clippings, leaves and harvest remains from garden plants are collected, they can be dropped into the unit. Chopping or shredding wastes, alternating high-carbon and high-nitrogen materials and keeping good moisture and aeration will all speed the process.

Advantages and disadvantages

For yard wastes, this is the simplest method. The units can be portable, moving to wherever needed in the garden. This method can take from six months to two years to compost organic materials, there is less labor involved but patience is needed.

Variations

Holding units can be made of circles of hardware cloth, old wooden pallets or wood and wire. Sod can also be composted with or without a holding unit by turning sections of it over, making sure there is adequate moisture and covering it with black plastic.

Turning units (See Page 5)

This is a series of three or more bins that allows wastes to be turned on a regular schedule. Turning units are most appropriate for gardeners & homeowners with a large volume of yard waste and the desire to make high-quality compost.

Which Wastes?

Non-woody yard wastes are appropriate. Kitchen wastes without meat, bones, shells, or fatty foods can be added to the center of the pile if it is turned weekly and reaches higher temperatures. Alternate the layering of high-carbon and high-nitrogen materials to approximately a 30:1 ratio. These should be moistened to the damp sponge stage. The pile temperature should be checked regularly. When the heat decreases substantially, turn the pile into the next bin. Dampen the materials if they are not moist and add more high-nitrogen material if heating is not occurring. Then make a new pile in the third bin, the compost should be ready for garden use.

Advantages and disadvantages

This method produces high-quality compost in a short amount of time, utilizing a substantial input of labor.

Variations

The unit can be built of wood, a combination of wood and wire, or concrete block. Another type of turning unit is the barrel composter, which tumbles the wastes for aeration.

***The following trouble shooting chart is a guide to efficient composting using a turning unit**

SYMPTOMS	PROBLEM	SOLUTION
Compost has a bad odor	Not enough air	Turn the pile, it needs aeration
Center of the pile is dry	Not enough water	Moisten materials while turning the pile, should have consistency of a damp sponge
Compost is damp and warm in the middle, but nowhere else	Pile too small	Collect more material and mix the old ingredients into new pile
Pile is damp and sweet-smelling but still won't heat up	Lack of nitrogen	Mix in a nitrogen source like fresh grass clippings, fresh manure, blood meal or ammonium sulfate.

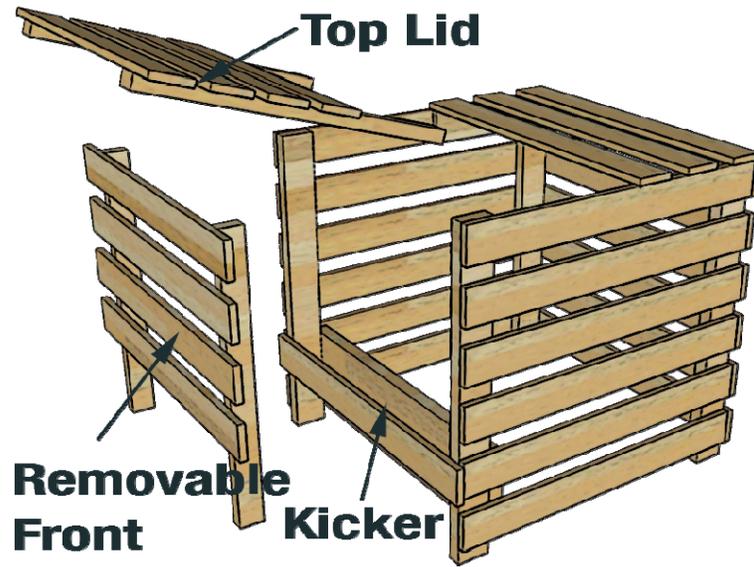
Hot vessel & Waste digester methods

As mentioned earlier certain items should be kept out of your organic compost piles. Bones, egg shells, fats, meat scraps, skin, carcasses and seafood shells require different conditions, containers, methods and types of bacteria to aid in their decomposition. Air tight vessels or waste digesters are designed to accept food wastes otherwise inappropriate for organic composting. What is known as hot vessel composting requires an air tight container to hold your compostable materials in. This type of container cuts down odors and protects the mix from scavengers and weather. The mix will need some sort of periodic aeration to aid in the bacteria's growth and the materials decomposition. This type of composting produces an unhealthy type of bacteria, direct contact should be avoided. Food waste digesters are fundamentally different from other composting methods. The digester does not ultimately produce a soil enhancing product. Their purpose is to cut down on the volume of food waste generated. The decomposed food residue must periodically be emptied into the trash.

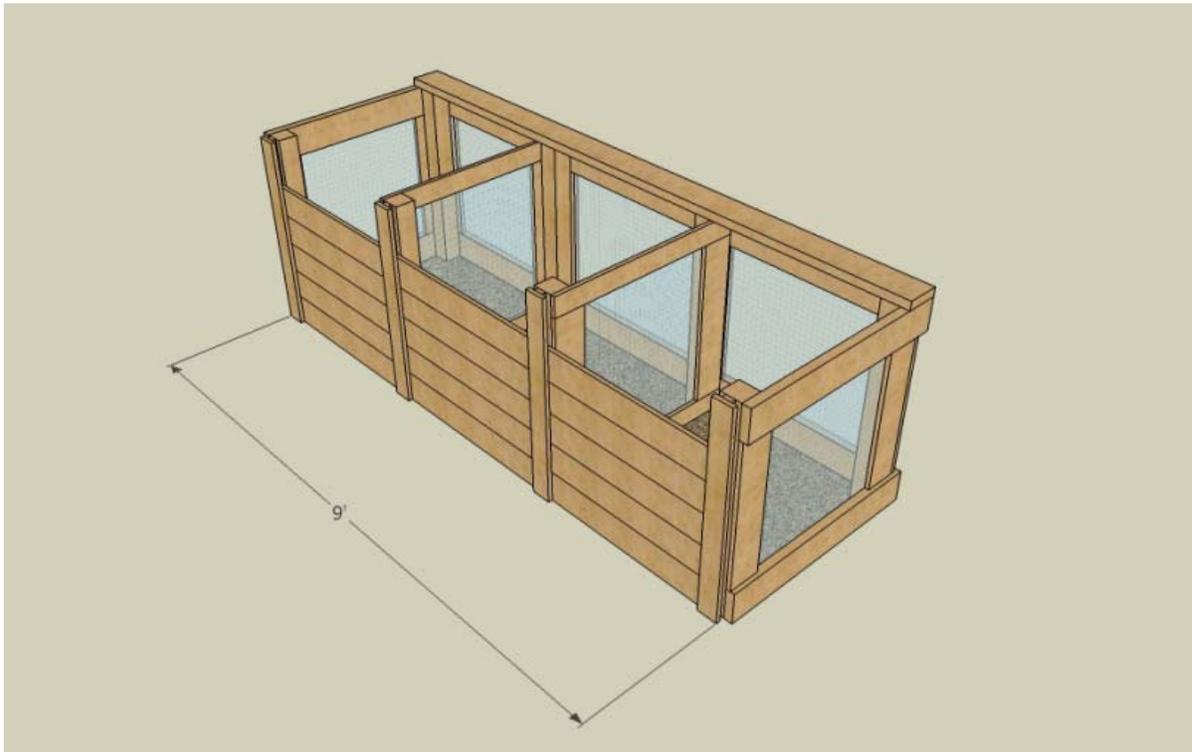
AIR TIGHT CONTAINERS **THAT CAN BE USED AS A** **DIGESTER**



TYPICAL HOLDING UNIT DESIGN



TYPICAL TURNING UNIT DESIGN



COMMERCIAL HOLDING /TURNING UNIT DESIGN



Sources

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www.hotbincomposting.com
- Compost Resource. “Composting the Basics” Nov. 6th, 2013
www.howtocompost.org
- Clean Air Gardening “How to Compost Shells, Meat & Dairy” Mar. 15th, 2015
www.cleanairegardening.com

*EARTH MACHINE COMPOSTERS AVAILABLE FOR PURCHASE YEARLY AT THE
A. DENNIS MOORE RECYCLING CENTER, 21 COMMUNITY DRIVE, HARPSWELL