



Cornell University Cooperative Extension

Schenectady County
Schaffer Heights
107 Nott Terrace, Suite 301
Schenectady, NY 12308

Tel: 518-372-1622
Fax: 518-372-8703
E-Mail: schenectady@cornell.edu
Web Site: www.cceschenectady.org

Winter Composting

Continue composting throughout the year, despite winter winds, dropping temperatures and snow. Although the decomposition process usually slows down in cooler weather, compost piles will keep working all year long. Residents of your pile, like bacteria, molds, mites and actinomycetes can survive the cold. However, to prolong their active life over the winter, they will need warmth, food, air, and moisture. Follow the tips in this fact sheet to optimize your composting in winter months and welcome spring with a productive, healthy compost pile.

Late fall preparations

Collect bags of dry leaves from your lawn and your neighbors. Stockpile excess dry leaves in large plastic garbage bags or covered garbage cans for use throughout the year. Harvest finished compost from your pile to make room for your winter additions. Since the decomposition process is slower in the winter, you may need the extra room. Use the finished compost in your garden or store it in a dry place for the spring.

Over the course of the winter

1. Continue layering "browns" and "greens"

Adding a lot of compostable material to your pile will shield the critters responsible for decomposition from the elements. Garden waste, spent perennials, sod, and - of course - the ubiquitous fall leaves are good, abundant choices in autumn. It is always best to layer greens (kitchen scraps, fresh garden waste) with browns (dead leaves, straw, newspaper). This ensures the right ratio of carbon to nitrogen, helps aerate and provides adequate drainage in the pile... all of which contributes to next spring's harvest of "black gold." Turning the pile in the winter is not necessary, since it may result in a loss of heat from the middle of the pile.



2. Insulate your bin or build a wind break

Insulating your bin will protect it from the harsh winter winds and cold. While the outside of your bin may freeze, the inside can still "cook." If you find yourself with an overabundance of leaves, pile them on! As you produce greens (kitchen scraps) over the winter, tuck them in under the insulating layer. You can provide extra insulation by surrounding your bin with black bags of leaves or straw/hay bales. Or try creating a windbreak with a tarp.

3. Maintain a "pre-compost" bucket

To reduce your cold winter trips to your bin, start a pre-compost bucket. You can use an empty bucket or trashcan in which you place your kitchen scraps. However, be sure to layer them with adequate browns to prevent smells. Add these materials to your outdoor bin whenever convenient or before your pre-compost bin gets too heavy.

4. Reduce particle size of browns and greens

The cold weather slows down the compost process. Smaller particle sizes of greens and browns provide more surface area to speed decomposition. Set up a cutting board for compost and chop up your food scraps before putting them in the bin. Leaves can be shredded with a lawn mower or trimmer.

Early spring maintenance

If your pile should freeze over the winter, it will return to active duty once thawed. Once it does, you will be happy that you took the time to layer your greens with browns. One common mistake is to pile all the winter's kitchen scraps onto your pile without layering or mixing in browns. All-greens piles are almost always stinky! If your pile is excessively wet due to the spring thaw, turn it and add more browns to soak up this moisture.

Building Strong and Vibrant New York Communities

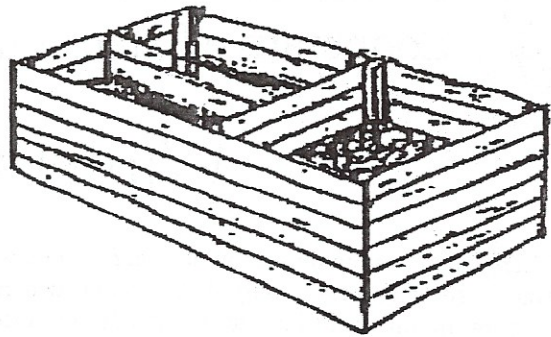
Cornell Cooperative Extension provides equal program and employment opportunities. NYS College of Agriculture and Life Sciences, NYS College of Human Ecology, and NYS College of Veterinary Medicine at Cornell University, Cooperative Extension associations, county governing bodies, and U.S. Department of Agriculture, cooperating.

Information courtesy of Cornell Cooperative Extension, Tompkins County, NY

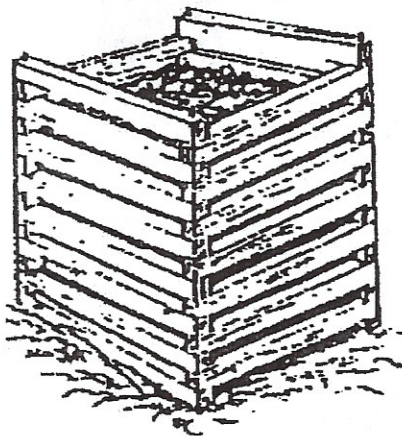
Building Bins and Boxes for Compost

You can save yourself some time by doubling the box size (4'x8') with a partition in the center. The material is forked from one section into the other and a new batch is then placed into the first section.

If you turn your compost heap twice, make a three section box (12'x4'). The third section/compartment can be used to cure and store the finished compost.



The Lehigh-Keston Bin. The Lehigh-Keston compost bin, designed by J.I. Rodale over ten years ago, has proved to be a popular design. The bin is made of wooden slats, is very portable, long lasting, and ideal for proper compost ventilation.

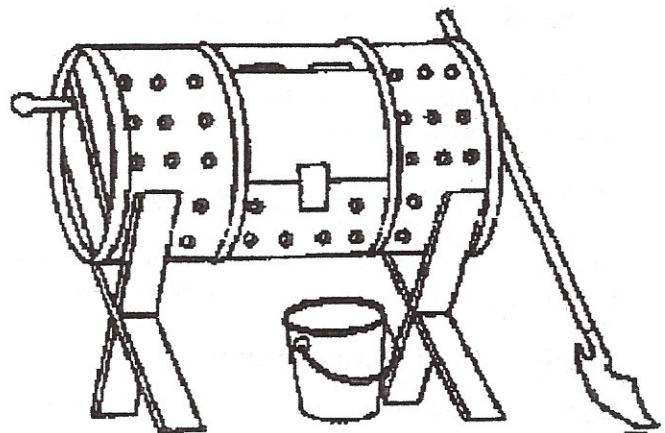


Drill holes at the ends of each slat vertically from top to bottom. Fasten together by inserting metal rods through the holes to form a square.

Perforated Steel Drum. A large 55-gallon steel drum with a secure lid can be used for composting. Cut holes in the sides to allow air to circulate and excess moisture to escape. At least 50 percent of the drum's overall surface should be perforated using a 1/2" drill bit.

Fill the drum about three-quarters full, secure the lid and roll it around the yard every couple of days. The material will be mixed and, most importantly, aerated by the rolling action.

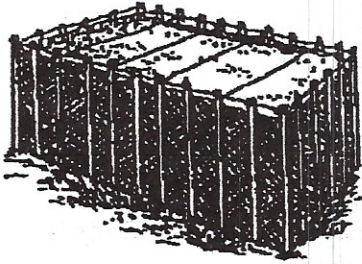
This is a relatively easy system to use and to maintain. Unless weather is excessively rainy, the lid should be removed after turning to enhance air penetration.



Building Bins and Boxes for Compost

To construct this container, first mark off a rectangle about 10'x5'. Drive the stakes six inches deep along the edge of this rectangle, placing them about a foot apart. Loop the bin with a continuous strip of baling wire.

Chicken Wire Bin



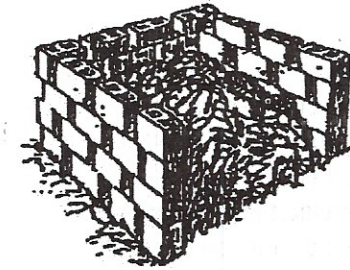
Place the chicken wire inside the stakes and fasten it by twisting small pieces of baling wire around the stakes.

Tie lengths of baling wire across the width of the container to keep the stakes from spreading when the bin is filled with compost. These cross braces looped over alternate pairs of stakes allow ample space for easy loading of your compost. As the compost presses outward against the chicken wire, the stakes will pull the soft baling wire bracings tightly around the container.

When it's time to turn the compost, remove the small ties holding the chicken wire to the wood stakes then remove the cross bracing wires. After pulling out the wooden stakes, carefully roll away the chicken wire and you'll find a nice solid

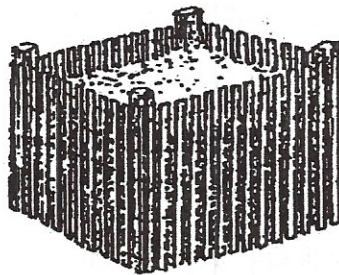
pile of compost ready for turning. Use the same materials to rebuild your container within shoveling distance of the old heap.

Block or Brick Bins



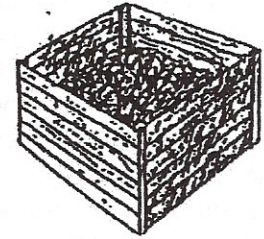
Compost bins can also be made of brick, or cement blocks, or rocks. Just lay the blocks without mortar. Leave spaces between each block to permit aeration. Pile them up to form three sides of a square container. This bin is sturdy, durable and easily accessible.

Snow Fence Bins



Some gardeners use pre-fabricated snow fencing for making compost bins. Snow fence bins are popular because they are simple to make and easy to move and store. To build this bin, buy the appropriate length of pre-fabricated fencing, and fasten two by fours (2 x 4s) to the bottom to form a square.

The New Zealand Box is another simple, efficient design developed by the Auckland Humic Club of New Zealand. There are many variations of this design. The simplest is a wooden structure 4 feet square by 4-5 feet high without top or bottom.



The wooden sides consist of 6-inch wide by 3/4-inch thick boards. Allow 1/2-inch of air space between each board so that air may penetrate the heap from all sides. The box is movable.

A divider in front slides down between two posts so that when you want to empty the box, you can pull the dividers upward and take them out one by one. 2 x 4s provide the structural framework for this box.

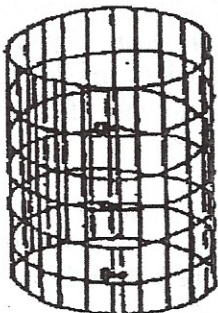
The preferred method of filling the box is to mix organic materials thoroughly with soil, lime and manure. Make one air hole in the center of the box all the way down to the ground using a crowbar. If you turn the mixture twice, you don't need to put in an air hole after the second turn.

When the compost is ready to be turned, it has to be piled outside the box and then put back again

Building Bins and Boxes for Compost

More and more gardeners are recycling household organic wastes by composting them. Many find that simply mounding compostable materials into a heap is unsatisfactory. Containers such as bins and boxes can protect the compost from wind, heavy rains and hot, baking sun. Many varieties of bins and boxes can make composting easier and improve its appearance and quality. The type of container you select depends upon your personal taste, the amount of labor you want to invest and the materials you have on hand.

Woven wire bin. One easy to make, economical container requires only a length of woven wire fencing held together by several small chain snaps.



Multiply the diameter you want for the compost heap by 3.1416. That's the length of wire you should buy. Once you've purchased the fencing and picked a location for the compost heap, bring both ends of the fencing together to form a circle.

The ends of the fencing are held together by three or four small chain snaps that are available at any hardware or discount store. Simply slip the snaps over any two wires to form the enclosure.

Start building the compost heap inside this wire enclosure. When it is half full, drive a wooden or steel stake through the center of the heap and into the soil beneath. Be sure that the stake is long enough so the top is as high as the final desired pile height. Fill to the top with compost material.

When you're ready to start a second heap, simply remove the snaps holding the ends of the fencing together. Pull the fence away from the completed heap, and erect it again at the new heap site. It takes less than a minute to remove these snaps and they can be used over and over again.

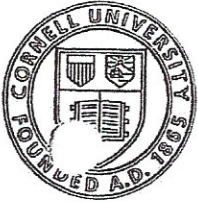
Even after the fencing is removed, the compost pile will keep a uniform shape. The stake through the center prevents it from caving in or falling apart.

If you're going to keep just one compost heap, remove the fencing when you get ready to turn the pile.

Set up the fencing within easy shoveling distance of the compost heap. Pull the stake out of the center. Now start turning the compost into the empty bin.

During dry weather spells, dig a depression in the top of each heap and water moderately. The stake will not interfere with the depression. In fact, the water will flow down the post into the center of the compost heap.

Chicken wire bin. A variation of the wire retainer described above can be made using chicken wire, wood stakes and soft iron baling wire. Thirty feet of ½"-woven chicken wire, 30 four-foot high stakes and about 60 feet of soft iron baling wire will make a container that will hold about 200 cubic feet of compost.



Cornell University Cooperative Extension

Schenectady County
Schaffer Heights
107 Nott Terrace, Suite 301
Schenectady, NY 12308

Tel: 518-372-1622
Fax: 518-372-8703
E-Mail: schenectady@cornell.edu
Web Site: www.cceschenectady.org

"Stealth" Composting

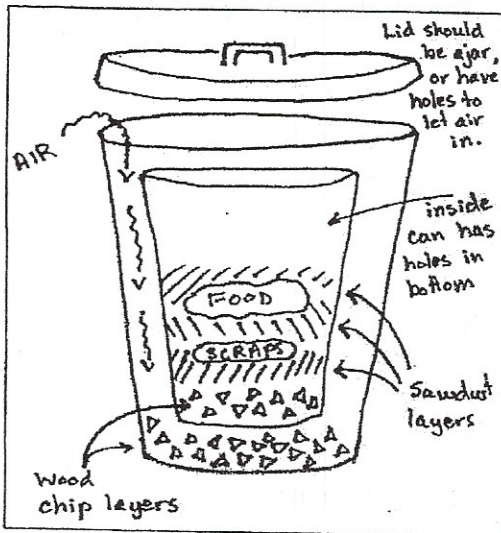
This is a technique for composting discreetly, in a garbage can or similar container. For those who want to compost but are constrained by limited space, or hypercritical neighbors, or are discouraged at the prospect of crossing a snowy yard to the compost bin, this may be the perfect technique! The bin can be beside your back door, in a garage, or even in your kitchen!

Here's what you need:

- One large plastic container and a smaller one that fits inside it (matched garbage cans work well)
- A method of punching holes in the bottom of the smaller container
- A place to put the larger container in
- Woodchips
- Sawdust (you can mix in some shredded paper)
- Food scraps!

How does it work?

Here's what it looks like, in a cut-away side view:



Here's what it looks like, in a cut-away side view: The inside container holds your food scraps. Each layer of food scraps should be covered well with sawdust. As this material starts to break down it will warm up – this is a sign that the decomposers are at work!

Warm air rises, and fresh air will get drawn in from the bottom. The coarse layer of woodchips in the outside container allows air to pass through the holes in the inside container and up through the layer of woodchips in the bottom there.

Fresh air is important, because a lack of oxygen will favor the "anaerobic" decomposers (who thrive in the absence of oxygen). These organisms help break down the food scraps, but they give off bad odors. In contrast the "aerobic" organisms (who require oxygen) do all their work without creating smells. Indoors or outdoors, the key to non-smelly compost is to allow oxygen to move through the pile!

When the container is full, move it to a spot out of the way to let the breakdown continue. You may have to add water if the contents dry out – the decomposer organisms need a moist environment. As they do their work you will see the volume go down by a third to a half. If conditions are right, it will take two to three months for the compost to finish the active phase. At that point it should be allowed to sit, preferably outdoors somewhere, with exposure to air and rain, for the compost to "cure" properly. (If you want to free up the two-can system sooner you can move the compost to an outside bin or pile after several weeks and let composting continue there.)

For more information about this indoor composting method, see the Cornell Composting web page: <http://compost.ces.cornell.edu/garbagecans.html>.

Information courtesy of Cornell Cooperative Extension, Tompkins County, NY

Building Strong and Vibrant New York Communities

Cornell Cooperative Extension provides equal program and employment opportunities. NYS College of Agriculture and Life Sciences, NYS College of Human Ecology, and NYS College of Veterinary Medicine at Cornell University, Cooperative Extension associations, county governing bodies, and U.S. Department of Agriculture, cooperating



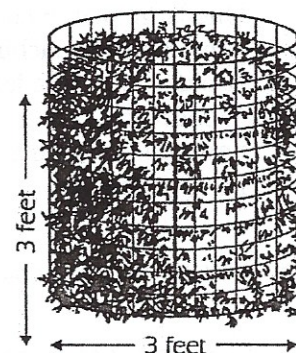
Welded Wire Cylinder Bin

These are inexpensive and easy to assemble. They are easy to move because a cylinder of welded wire fencing is stiff enough to stand up on its own without posts. Welded wire bins also offer ready access to the material inside for turning or harvesting your compost.

Materials needed:

Fencing length: The bin should be a minimum of 3 feet in diameter, so you need at least 10 feet of welded wire fencing. We recommend 11 or 12 feet, to give enough to overlap the ends and allow for expansion. (Max. diameter is 5', which requires ~15' of fencing.)

Fencing type: The fencing comes in different mesh sizes; 1" x 2" mesh or smaller is fine. Larger mesh (2" x 4") is less expensive and will also work, although some particles may fall through. Fencing width of 36" gives a 3'-tall bin; 48" width also works and would hold more, although a tall bin can be difficult to reach into. Garden supply stores sell the fencing by the foot.



Ties: Use short lengths of wire, plastic-coated twist-ties, or nylon string to tie the cylinder closed. (Tying the ends together makes it easy to undo the cylinder when you are ready to move the bin or harvest the compost.)

Assembly Steps:

The cut ends of the fencing are very sharp, so it is best to either snip the ends off close to a crosswire and then file down the edges, or cover each end of the fencing with two layers of duct tape folded over to cover the sharp wires.

Lap the ends of the fencing over each other to get a cylinder of desired size. Tie the ends closed, and set your bin in place.

Locate the bin in a shady, well-drained, level spot that is convenient to your kitchen and/ or your garden. (Think of both summer and winter accessibility.)

Using the Bin

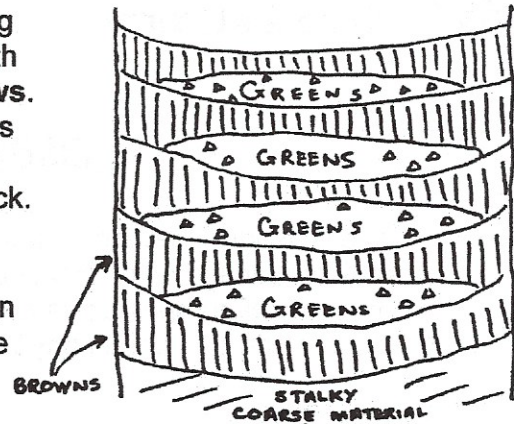
Fill the bin as you would any other type bin. The Lasagna method works well with a welded wire bin (see our Lasagna handout). When you wish to turn the material, or harvest finished compost, simply undo the ties and unwrap the fencing from around the compost. The material inside should hold its shape like a layer cake, because it will have settled and started to break down. Reset the cylinder in the desired spot, and start again.



Layering Technique:

- Alternate green and brown layers, starting with a brown layer and always ending with a brown layer so that **no food ever shows**.
- Brown layers should be two to three times as thick as green layers. Green layers should be no more than 1 or 2 inches thick.
- Brown layers should be shaped like saucers – lower in the center and higher around the edges – so that the next green layer can be kept to the interior of the pile with **no food showing on the edges**.

Cut-away view of layers within a bin



Routine Tasks:

- Whenever your indoor collection container is ready to be emptied, take it out to the compost bin, spread the food scraps on top in thin layers – keeping them away from the edges! – and cover them with a generous layer of browns.
- Wash out the kitchen container and return it to its spot, lined with a fresh piece of newspaper to make cleaning easier.

Optional Maintenance:

With this layering technique it is not necessary to turn the compost. However if you wish to get the compost finished sooner, you may choose to turn the bin contents. Compost forks or other digging tools may be used to stir and mix ingredients right in the bin.

Alternatively, if it is possible to simply lift off or undo the existing bin, then you can get easy access to the unfinished compost. Reset the empty bin, put down an initial layer of stalky material, and turn the partially finished compost into the new bin. This will mix the ingredients, and bring the materials that were on the outside edges in to the middle where they will start to break down faster.



Harvesting Finished Compost:

The materials on the bottom layers will tend to finish first, since they started first. If there is unfinished compost on top of the bin, transfer the unfinished compost to a new bin. The finished compost may then be harvested and put to use.

The length of time it takes for compost to be ready depends on many factors, so it is difficult to give a general rule for how long it will take. Weather conditions, the size of your bin, the type of materials included, the amount of turning, and other factors all play a role in determining the speed of breakdown. Generally, a year should be sufficient. But there are ways to test whether or not the compost is “done”, if you are not sure. Check with Cooperative Extension for more information on assessing and using your compost.



Cooperative Extension

Tompkins County

Compost Education
Education Center
615 Willow Avenue
Ithaca, NY 14850-3555

Rotline 607.272.2292
for compost help
acm1@cornell.edu
www.ccetompkins.org/compost



Lasagna Composting

The "Lasagna Method" is a way of structuring a compost system so that maintenance is minimized, pests are deterred, and both large and small amounts of compostables can be handled at any time. This simple layering system can be used in any bin.

Initial Layer:

- The first layer in your bin should be a loose layer of twigs and branches – **stalky material** that will not compress as the compost bin fills up.
- The purpose of this layer is to build in a way for air to reach the center of your pile. Oxygen ensures that the decomposition will not generate unpleasant odors.

"Brown" Layers:

- These can be made of straw, dried leaves, wood chips, sawdust, even torn up paper. All these materials are **carbon-rich**, supplying a critical food source to the decomposer organisms.
- The brown layers help to **balance the moisture** in a pile, since the brown materials are usually much drier than the food scraps in the green layers. These materials are also usually coarser, so they create a **porous structure** that allows air into the center of the pile and allows excess water to escape. Finally, the brown layers serve as a **visual and physical barrier to pests**, by filtering food smells and putting the food scraps out of reach of insect pests.



"Green" Layers:

- These are **nitrogen-rich** materials, supplying another critical food source for the decomposers.
- Acceptable "greens" include food scraps from meal preparation, inedible leftovers, grass clippings that are too long to be left on the lawn, garden weeds, manure, etc.
- **DO NOT include** meat, oily materials, dairy products, or bones. These risk attracting pests to the compost area.



Decisions! Decisions!

Method	Advantages	Disadvantages
Unaerated static piles	<p>Least amount of maintenance</p> <p>No turning required</p> <p>Low cost</p>	<p>Longest composting time</p> <p>Care must be taken with initial mixture to ensure porosity and air circulation</p> <p>Must have available space to let piles sit for long periods of time</p>
Passively aerated windrows	<p>Faster composting time than above</p> <p>No turning required</p> <p>Piping network underneath pile speeds up process</p>	<p>Requires a porous foundation and a cover layer to absorb moisture and insulate the windrow</p> <p>Must have available space to let piles sit for long periods of time</p>
Turned windrows	<p>Regular turning and mixing speeds up process</p> <p>Effective in areas with freezing winter temperatures</p>	<p>Front-end loader or specially designed equipment necessary</p>
Aerated static piles	<p>Does not require turning</p> <p>Network of pipes and blowers speeds up process, allows better control over moisture and temperature</p> <p>Piles can be larger due to forced aeration</p>	<p>Higher overhead than other methods, i.e., electricity, blower and pipe network</p>
In-vessel systems	<p>High degree of process control</p> <p>Mechanical or automated control systems</p> <p>Fastest method of composting</p> <p>Transportable composting containers effective for urban areas</p> <p>Protection from severe weather</p>	<p>High cost of equipment, buildings, and overhead</p>
Vermicomposting	<p>No turning required</p> <p>Many different systems available, from single units to multiple rows</p>	<p>Initial mixture must include appropriate bedding and adequate moisture and oxygen to sustain worm habitat</p> <p>Moderate temperatures required for outdoor use</p> <p>Due to low temperatures, additional heating and/or drying steps may be required</p>