

Composting Made Easy: The Why's and How-To's

Every gardener has heard about composting, but does everyone know what role it plays in a well-managed ecosystem? Turning so called "greens" and "browns" from the yard and house into "black gold" for the garden is a time-honored method of adding humus and essential microorganisms to the soil and improving the soil's fertility, water-storing capacity and drought-tolerance.

Compostables, including food waste and yard trimmings, make up 35-40% of municipal trash. These are valuable resources that can be recycled back into the earth...we can help make that happen!

Food waste from our households makes up about 25% of trash. Sent to landfills, this organic material is broken down without air (anaerobically) and releases methane gas which is worse than carbon dioxide and extremely potent at accelerating climate change! And, if the household waste is sent to incinerators, it is unnecessarily burned adding to air pollution. The **BEST** thing to do is to keep food waste out of the trash!!

Yard waste, such as grass clippings and fall leaves/brush/other plant material, makes up about 10% of trash. Sent to landfills, it too is broken down anaerobically, releasing methane and greatly increasing global warming. If sent to the incinerators, it adds to air pollution. The **BEST** thing to do is to keep this material out of the trash.

Here are some of the ways we can keep food and yard waste out of the trash:

1. Leave grass clippings on the lawn and fall leaves somewhere on the property. This adds back valuable nitrogen to the lawn without using fertilizers and nutrients from leaves to the rest of the yard.

2. Composting in the Backyard at Home:

Composting is easy!

To make compost, just follow these simple steps:

- 1. Add three parts "browns"...**
Fall leaves, straw, salt marsh hay, shredded paper and cardboard (newspaper, paper towels, paper plates, paper bags), chipped brush, sawdust, pine needles (pine needles should not make up more than 10% of total material in pile).
- ...and one part "greens"**
Grass clippings, weeds (not laden with seeds), vegetable and fruit wastes, seaweed, eggshells, coffee grounds and filters, tea bags, manure (horse, cow, rabbit, chicken, goat, gerbil, etc).
- 2. Mix or layer materials.**
After every 12" or so, add a few shovelfuls of rich soil or compost.
- 3. Keep it damp and aerated.**
Wait a few months, and voila...black gold!

For best results, and to keep out odors and pests,

DO NOT ADD:

- Meat, bones, fat, grease, oils
- Peanut butter
- Dairy products
- Cooked foods with sauces or butter
- Dog and cat manure
- Diseased plants
- Weeds gone to seed
- Weeds that spread by roots and runners (vines)

Prepared by the Massachusetts Department of Environmental Protection

Check out the following links for information on how to compost outside at home:

1. <https://www.mass.gov/lists/home-composting-green-landscaping>.
2. <https://www.mass.gov/doc/presentation-home-composting-for-zero-waste/download>.
3. <https://extension.wvu.edu/natural-resources/soil-water/composting-for-beginners>.
4. <https://ecommons.cornell.edu/bitstream/handle/1813/29111/compostingathome.pdf?sequence=2&isAllowed=y>.
5. Cornell University: <https://csetompkins.org/gardening/composting/compost-resources>.
6. EPA: <https://www.epa.gov/recycle/composting-home>
7. https://www.umass.edu/wastemanagement/sites/default/files/2cg_CompostBooklet_0.pdf.

3. Composting Indoors at Home with Worms (Vermiculture):

Vermicomposting is simply composting with worms. They speed up the composting process,

aerate the organic material in the bin and enhance the finished compost with nutrients and enzymes from their digestive tracts. It is best to use red worms, which thrive in decomposing organic matter such as leaf piles, compost heaps and old manure piles.

Red worms make composting indoors feasible because they are very efficient processors of organic waste.

Check out this link for information on how to do vermicomposting at home:

<https://www.mass.gov/doc/massdep-fact-sheet-vermicomposting-indoor-composting-with-worms/download>.

4. Composting Services by Private Companies:

If you do not wish to compost or do not have space on a deck/balcony or in a yard to do so, several private companies offer residential compost pick-up services for a fee. There are two in eastern Massachusetts (Black Earth and Offbeet Compost). Black Earth is the “Preferred Vendor” for such fee services in Belmont, Brookline, Canton, Lexington, Newton, and Wakefield. Check with your Town/City to find out what is available in your town.

5. Community Composting by Cities and Towns:

Most towns in MA offer a composting area for local residents to drop off yard waste and, sometimes, Christmas trees and process this material into compost for resident use. Check with your Department of Public Works to see what your town offers.

A number of cities and towns offer municipal curbside pick-up of food waste. Hamilton requires residents to separate food waste from their trash and it is picked up curbside by the Town. Arlington has a three-year pilot voluntary program of curb-side pick-up. Boston started a voluntary program last year, and other towns are also offering the service: Westborough, Medford, Nahant and Norwood to name a few. Check with your town to see if they are offering this service and/or request that they do so.

6. Bokashi Indoor Composting:

Bokashi composting is a method that is fundamentally different from other forms of composting. It is an anaerobic process that ferments food waste in an indoor kitchen composter and turns it into compost tea and pre-compost. Developed in the early 1980s by Dr. Teuro Higa, a professor at the University of the Ryukyus, Okinawa, Japan, the method involves layering [kitchen scraps](#) (vegetables and fruits, as well as meat and dairy scraps) with a bokashi inoculant in a special bucket. Usually, the inoculant consists of either wheat germ,

wheat bran, or sawdust combined with molasses and effective microorganisms (EM). The bran/molasses serve as the food for the microorganisms, which are the same natural microorganisms found in soil.

Bokashi Composting vs. Traditional Composting

Unlike traditional composting, which is an aerobic process that requires oxygen, bokashi is an anaerobic process that requires that you isolate the materials from oxygen as much as possible. The recipe for traditional [composting](#) is a mixture of "green" materials that are high in nitrogen, "brown" materials that are high in carbon, along with air and water. In essence, the bokashi process is a fermentation process rather than a traditional composting method. A big difference between bokashi and traditional composting is that you are [less restricted in what you can compost](#). Any food waste, including dairy and meat, is fair game. However, bokashi compost bins have more space limitations than [traditional compost bins](#). As bokashi compost bins are usually for indoors and small, there is no room for any garden waste, such as grass clippings.

Pros

- It lets you use dairy and meat scraps that are not incorporated in other forms of composting.
- Bokashi composting requires a relatively small space.
- The resulting product makes for a highly nutritious pre-compost that can be buried in compost trenches in a garden or added to a traditional compost pile.
- It takes 10 days to two weeks to produce the end product.

Cons

- The pre-compost must either be [buried in trenches](#) in the garden or added to a traditional compost heap for further breakdown.
- The process requires a special airtight bucket or bin with the ability to drain off the liquid that is produced.
- Both the bokashi tea and the pre-compost are highly acidic.

Ways to Use Bokashi Compost

The end product of bokashi composting is different from traditional composting which [can be used as is](#) in the garden and on plants.

With a pH between 4.0 and 5.0 (or even lower depending on what went into the bin), both bokashi tea and pre-compost are quite acidic. Bokashi tea can be used as a fertilizer on houseplants or garden plants directly if it is diluted first at a rate of about 1:100. Add 1 tablespoon of bokashi tea to 6 ¼ cups of water. For acid-loving plants such as azaleas, you can use slightly less diluted water of about 1:80.

Add the bokashi pre-compost to a traditional compost pile, large planters, or garden soil. Because of its high acidity, distribute the pre-compost as evenly as you can to avoid it being concentrated in one spot. It takes about two weeks for the bokashi pre-compost to be absorbed by the soil web, about a week longer in cold weather. If you want to use bokashi [compost for your lawn](#), it is safer to mix it with other compost before spreading it. (From *The Basics of Bokashi Composting: A Composting Method Using Fermentation* by Colleen Vanderlinden, [THESPRUCE.COM](http://thespruce.com))

Check out the link: https://media.nationalgeographic.org/assets/file/03_Bokashi.pdf. Search YouTube videos online for how-to's, making a composter yourself, and how to handle the finished products. NOTE: Undiluted Bokashi Tea should not be poured down the drain connected to a septic system or poured onto the ground.

Gary Phillips of the Northborough Garden Club has shared this information from his own experiences with Bokashi and traditional outdoor composting:

Bokashi Indoor Composting of Kitchen Waste by Gary Phillips, Northborough Garden Club

Composting is the green way to dispose of your kitchen and yard waste. Our DPW has a service to dump yard waste, but who knows where it goes? Landfill? I am still learning, but this is what I do with my compostable materials.

Kitchen Waste

I have used the bokashi method (anaerobic process) in the kitchen for the last three years. I have a small compost bin on the kitchen counter, and when that fills, it gets moved to a larger bin next to the trash can, where I add a small scoop of bokashi and mix it in. The large container fills in about two weeks, then it moves to the basement (cool and dark) to complete the fermentation. I bring an identical empty container to the kitchen to start the next batch. The compost ferments anaerobically for two more weeks in the basement, and then it gets buried into the garden in a place that has no plants. The pH is low and would burn the roots of a nearby plant. However, after two weeks in the garden, worms will complete the process, and it can be safely moved to another location, buried adjacent to existing plants, or wherever you need to add organic matter. Fill the hole with the next aged bokashi batch. Repeat. In the winter when worms are not active and the ground is frozen, I use traditional composting methods for kitchen waste (no bokashi).



This is a great method for anyone who does not have a proper compost pile. The method is super-fast and does not take much space in your garden/yard. Note: stinky material like meat goes in a plastic bag in the freezer until trash day. This way nothing is stinky in the house, also wild animals are not attracted to my trash bag b/c even though it may be thawed by the time the truck comes, it does not smell.

Order from SD Microbes. DO NOT order from Amazon. I did that initially and the compost rotted (did not ferment) and there were a ton of flies in it! The whole neighborhood smelled, and wild animals dug up the area thinking they would find dinner. Good quality bokashi actually smells kind of nice when it ferments!

Soil quality does matter.

Here are two cotton plants grown from seed, transplanted to different gardens. The one on the left is at the home of a Master Gardener friend. The one on the right is my garden (amateur...) in soil that is about to be amended!



Composting Yard Waste Outside

by Gary Phillips, Northborough Garden Club

Composting at home is a great way to repurpose yard and kitchen waste to make your own nutrient-rich soil. The process can be as simple as making a pile of random material and forgetting about it, or the other extreme- a calculated project with a scheduled maintenance plan. Both extremes work! Here goes the technical plan! Did you ever attempt to make compost and end up with a muddy mess? 100% grass clippings will yield a muddy mess. 100% kitchen waste will too. Similar to the way acid and base can be mixed to create a pH=7 (neutral) solution, compost needs a balance of green and brown material to decompose to create something useful. The important parameter is the balance of Carbon and Nitrogen, which is presented as a ratio of C:N. 30 parts Carbon to 1 part Nitrogen is optimal; "30:1 ratio". See diagram. Wood chips, shredded cardboard, and sawdust have not much Nitrogen, so those are the extreme brown material, where are very high in Carbon. DON'T add too much of those to your compost unless you are adding an equal amount of really high Nitrogen material like hair/fur. Short of calculating it, think about combining 5 pounds of wood chips with 5 pound of hair or fur to a result in a balanced 30:1 Carbon to Nitrogen ratio. Another equal balance using the images would be to combine 5 pounds of grass or weeds with 5 pounds of leaves or paper. Coffee grounds are 20:1, which is pretty close the 30:1 target, so that group would be a weak green material. It would take a whole-lotta coffee grounds (weak green) to balance out shovel full of wood chips (strong brown). Get it? Regarding the maintenance plan, it is recommended to flip the compost on a certain frequency. I flip mine one or two times per summer using a spading fork or shovel and that works for me. More often would be better.

Things I don't compost.

- corn cobs and sticks- they take too many years to decompose.
- meat or greasy kitchen waste- yuck
- seed heads- I don't want random plants growing where I spread the compost. Those go to the DPW. (Stems and leafy parts of the plants do get composted at home.)
- cantaloupe seeds- they sprout in the compost.

Ash from the wood stove is basically super-concentrated wood chips. I mix a little of that with my grass clippings to balance it out. (Happy to share ash if anyone needs some.)

Shredding dry cardboard is not much fun. It is more enjoyable to leave the box out in the rain because wet cardboard is really easy to tear into the small strips, and labels and tape also remove easily from the saturated wet cardboard.

Grass clippings and stems in late summer + leaves in the fall is a good plan (good ratio). That compost will be ready the next summer.



"GREEN" MATERIALS



**COFFEE
GROUNDS**
20:1

**LOW-CARB
VEGETABLES**
20:1



POTATO PEELS
25:1



**GRASS
CLIPPINGS**
15:1

WEEDS
15:1



**LEAFY GREEN
VEGETABLES**
17:1



**SOYBEAN
MEAL**
6:1

HAIR/FUR
10:1



SPROUTS
12:1

20:1 - 25:1

15:1 - 17:1

5:1 - 12:1

Each ratio listed is based on averages. Assuming the ideal ratio for composting is 30:1, any ingredient with a higher nitrogen content is considered a "Green". Ratios can vary due to any number of environmental factors and shifts in cellular structure.

"BROWN" MATERIALS



NUT SHELLS
35:1

FRUIT
35:1



CORN COBS
50:1



STRAW
75:1

LEAVES
60:1



**SHREDDED
PAPER**
175:1



SAWDUST
325:1

**SHREDDED
CARDBOARD**
350:1



WOOD CHIPS
400:1

35:1 - 50:1

60:1 - 200:1

**300:1
& OVER**

Each ratio listed is based on averages. Assuming the ideal ratio for composting is 30:1, any ingredient with a higher carbon content is considered a "Brown". Ratios can vary due to any number of environmental factors and shifts in cellular structure.