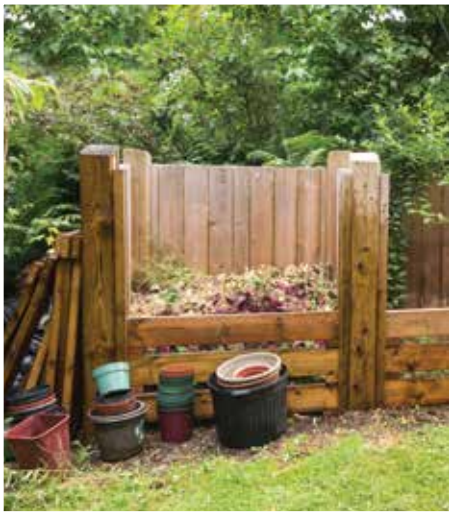


COMPOSTING

RECYCLING NATURALLY

Simple Steps for Starting at Home

SC DEPARTMENT *of* **ENVIRONMENTAL SERVICES**

Provided by the S.C. Department of Environmental Services' Office of Solid Waste Reduction & Recycling
des.sc.gov/dontwastefoodsc

Composting is nature's way to recycle.

Composting happens. It's simply the slow, natural decomposition of organics.

Composting at home is the controlled and faster decomposition of organics such as yard trimmings and food waste that you and your family generate. Microorganisms break down this material into compost – a nutrient-rich product that can be used as a soil amendment in yards, gardens, flower beds and potted plants.

Table of Contents

Why compost at home?

- **It's good for you and the environment.**

  The product you make is valuable. It can improve the soil, prevent erosion, reduce the use of fertilizer and water – saving natural resources and money – as well as decrease the amount of waste you generate.

- **It involves little effort, equipment, expense and expertise.**

  This guide addresses several home composting options and will help you decide which one is best for you. Backyard composting is the most common choice and the focus of this publication.

Let's get started.

Consider the following questions when planning to compost at home. Use the flow chart on the following page to help you decide which method to use.

1. **How much space do you have at home?**
2. **What material will you be composting?**
3. **How much time and effort can you give to this project?**

What type of composting works best for me?

Backyard Composting Options

Do-It-Yourself Bins

TYPE	PROS & CONS	SUGGESTIONS & PRECAUTIONS
Bricks	**Pros:** Long-lasting, neat appearance, inexpensive if reusing material, can add material during process. **Cons:** Time consuming to build, expensive if using new material, cannot be moved.	Layer bricks to leave spaces for aeration.
Cinder Blocks	**Pros:** Long-lasting, holes provide aeration without having to turn material as often, inexpensive for reused or new material, can add material during process. **Cons:** Cannot be moved.	Mortar may not be required if stacked evenly. You should need 20 or less standard cinder blocks for a bin 3 feet square.
Wire	**Pros:** Simple to build, inexpensive for reused or new material, can add material during the process. **Cons:** Temperature may not stay as hot.	Cut an opening in the wire towards the bottom to remove finished compost.
Wooden or Pallets	**Pros:** Inexpensive if reusing material. **Cons:** Will have to be replaced eventually due to decomposition of the wood.	Untreated wood is preferred. Check with local stores to see if they will donate used pallets. Using chicken wire in combination with the wood will help hold materials in the bin.
Three Sections	**Pros:** Reduces decomposition time from months to weeks, provides storage for finished compost, can produce higher volume of material at varied intervals, can add material during process. **Cons:** Time consuming to build, more manual labor to turn material.	Fill the first bin with material. When it's full, turn the contents into the second bin. Begin filling the first bin again while continuing the process of moving the material from the second to the third bin. When the material in the third bin is ready, remove the finished compost and begin the process again.

Brick Bin

Cinder Block Bin

Wire Bin

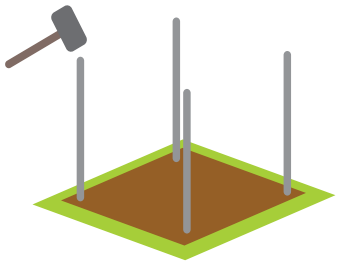
Wooden Bin

Three-Section Bin

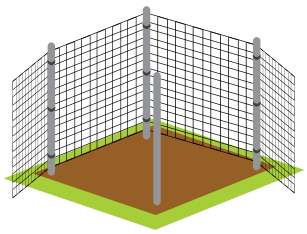
DIY Wire Bin

SHOPPING LIST

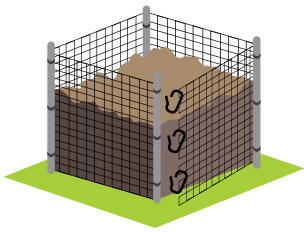
- 4-ft. metal poles (4)
- chicken wire (12+ ft.)
- zip ties (12+)
- metal clips (3+)



STEP 1:
Use a hammer to drive metal posts or rebar into the ground. Space the posts about 3 feet apart.



STEP 2:
Use about 12 feet of chicken wire to wrap around the outside of the posts. Attach wire to posts with zip ties.



STEP 3:
Leave one end detached so the bin can be opened to turn the pile. Use metal clips to close the open end.

Bins to Buy

TYPE	PROS & CONS
Circular Bins	**Pros:** Lightweight, adjustable, can add material during process. **Cons:** Minimal barrier to pets/pests.
Enclosed Bins	**Pros:** Neat appearance, low cost, low maintenance, good barrier to pets/pests. **Cons:** Slower decomposition time, cannot add material once full, limited space for material.
Rolling Bins or Barrels	**Pros:** Can be moved for loading and emptying or for out-of-sight storage, low maintenance, less manual labor, faster decomposition time, good barrier to pets/pests. **Cons:** Fully loaded drums can be heavy and difficult to roll, less capacity for material.
Tumblers	**Pros:** Simple loading and emptying, low maintenance, less manual labor, good barrier to pets/pests. **Cons:** Fully loaded drums can be heavy and difficult to turn, less capacity for material.

Circular Bin

Enclosed Bin

Tumblers

Open Composting

TYPE	PROS & CONS	SUGGESTIONS & PRECAUTIONS
Piles	**Pros:** Minimal labor, can add material during process, low maintenance. **Cons:** Slower decomposition, no barrier to pets/pests.	When adding material, mix well and cover with browns.
Pits or Trenches	**Pros:** Minimal labor, no browns required, low maintenance. **Cons:** Slower decomposition, new holes/trenches required for new material.	Fully cover greens and bury where pets will not dig.
Sheet Mulching or Lasagna Gardening	**Pros:** No moving compost to garden, low maintenance. **Cons:** Wait time for planting, no barrier to pets/pests.	Overlap cardboard or wet newspaper for the weed barrier and plant directly into the top layers.

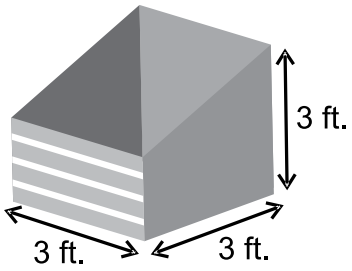
Pit Composting

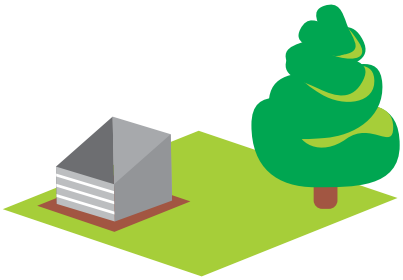
Collecting Your Household Food Waste

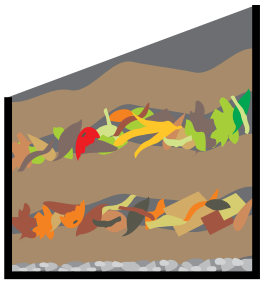
A container with a lid is a great way to store food waste in the kitchen until you are ready to take it outside. To avoid odors and flies, empty the container at least every two days, sprinkle sawdust on top of food layers or store your food waste in the freezer.

Backyard Composting Step-By-Step

Once you've decided which backyard option you'll be using, follow these steps.







1

Size matters.

Three square feet is ideal for a pile or bin, but don't exceed 5 square feet. The spot should be level and at least 2 feet away from structures (e.g., house, fence, trees).

2

Connect to the soil.

Your compost needs microorganisms from the soil. If using a pile or bin open to the ground, loosen the soil about an inch deep before adding material. For enclosed bins, place a layer of soil at the bottom of the container.

3

Add ingredients.

Making compost is a lot like cooking a meal – you need a recipe. Alternate layers of greens and browns as listed below. **TIP:** Make sure the top layer is always browns.

4

Check moisture.

Water is important. Too little moisture will inhibit the composting process. Too much moisture will cause the compost to smell. **TIP:** The compost should be as moist as a damp sponge.

5

Mix it up.

Air is essential. Use a pitchfork, shovel or roll your tumbler to turn your compost – preferably once a week, but no less than twice a month – to inhibit odor-causing bacteria and to speed the process.

6

Watch and it's done!

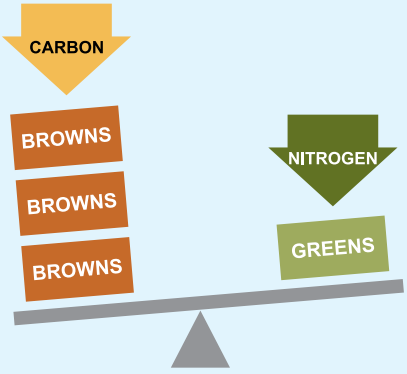
As material breaks down the compost will get warm. Don't be alarmed if there is steam. Wait about 12 weeks. When your compost has no pieces of food and is a dark, soil-like material, it's ready! See pages 8 and 9 for more tips.

The Compost Recipe

Four basic ingredients are required for backyard composting: 1) **browns**; 2) **greens**; 3) **air**; and 4) **water**.

Mixing the right amounts of these ingredients will provide the composting microorganisms with enough carbon and nitrogen as well as oxygen and moisture to break down the material into finished compost.

Recipes vary. A common mix is three parts browns to one part greens. Other variables in making compost include pile size, content, particle size, turning frequency, moisture and temperature. Getting the right proportions may take time and adjustments, but don't get bogged down on the recipe.



What goes in your backyard compost?

CARBON MATERIALS (Browns)	NITROGEN MATERIALS (Greens)
Shredded cardboard	Bread & grains
Dryer and vacuum cleaner lint	Coffee grounds & paper filters
Crushed egg shells	Fruits (cooked or uncooked – limit citrus)
Fireplace or wood ash (no coal ash)	Green grass clippings
Hay and straw	Green leaves
Pinestraw (small amounts)	Green shrub prunings
Nut shells	Hair and fur
Household plants and used potting soil	House plants
Old brush, shrub trimmings and prunings	Kelp or seaweed
Paper towels and towel rolls	Manure from chickens, rabbits, cows, horses (herbivores)
Saw dust and wood chips (untreated)	Old flowers
Shredded newspaper	Tea bags (with tags)
Yard trimmings (dry leaves, clippings and twigs)	Vegetables (cooked or uncooked)

NOTE: Always mix food waste into the middle of the pile to avoid odors and pests.

DO NOT COMPOST THESE ITEMS IN BACKYARD BINS!		
Coal ash from briquettes	Glass	Plastic
Dairy products	Meat, bones or seafood scraps	Treated or painted wood
Diseased or infected plants	Metal	Trimmings toxic to other plants (e.g., black walnut, hemlock)
Dog, cat or human waste	Oils, fats, grease or lard	Weeds, roots or seeds

Temperature Check

Temperature is an essential component of composting. As organic material decomposes, heat is produced. This heat provides an environment where the microorganisms can work to break down the material. Understanding and monitoring the temperature are integral to ensuring that you produce quality compost that is free from potentially harmful pathogens.

Here is some basic information on temperature.

- **A properly working compost pile will reach temperatures of 130°F to 160°F.**
- **Use a compost thermometer.** Temperatures should be taken from the center of the pile where it is hottest. Keep a record to compare different phases based on ingredients and methods.
- **Heat destroys pathogens and weed seeds.** Most pathogens are destroyed at temperatures of 130°F to 140°F for 72 hours. Most weed seeds are destroyed at temperatures of 140°F or above for 72 hours.
- **Don't overheat.** Heating your pile above 170°F for more than a few hours is not recommended because it inhibits most microorganisms and shuts down decomposition.

Common Problems & Simple Solutions

Anytime you try something new, problems can arise. Luckily, composting is not too complicated and most problems are simple and can be easily remedied. Here are the usual trouble spots.

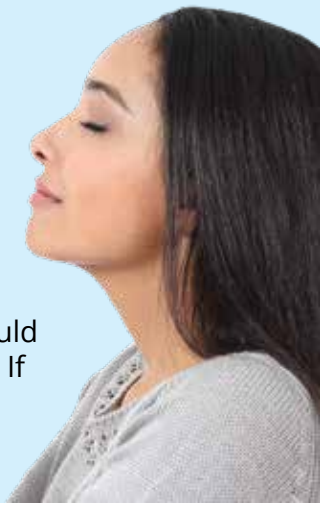
SYMPTOM	SITUATION	SOLUTION
The pile has a rotten-egg smell.	There is too much water.	Turn the pile and add more browns if it's soggy.
The pile has an ammonia smell.	There is too much nitrogen or not enough air.	Add browns and turn the pile.
The pile isn't decomposing quickly enough or isn't producing enough heat.	The pile is too small.	Mix new ingredients into the pile.
	The material is too dry.	Add water and turn the pile.
	The pile needs nitrogen.	Add greens.
	The pile needs oxygen.	Turn the pile more frequently.
The pile is too hot. The temperature is 170°F or above.	There is too much nitrogen.	Add browns and water, then turn the pile.
The pile is losing heat before the compost is finished.	The material is going anaerobic – losing air.	Add greens and turn the pile.
Flies and/or gnats are around the pile.	The greens are exposed.	Check the material list on page 7. Cover the greens with browns.

When is your compost ready to use?

When material at the bottom has no remnants of food or yard trimmings and the pile begins to cool, your compost should be ready to use. The temperature will begin to drop while turning the pile just before the compost is cured and ready to use. It will be the rich brown color of good soil and smell earthy.

The nose knows.

A simple smell test can be done to see if your compost is ready. Place a small amount in a plastic bag and take a whiff before sealing the bag. After a few days of storing the bag in a dark place, the sample should smell the same as it did before. If it smells worse, your compost needs more time to cure.



Uses for Compost

- **Use it as mulch.** Spread 2-3 inches around plants, trees, shrubs to help retain moisture.
- **Use it on the lawn.** Apply 1-3 inches of compost to your lawn and water it into the soil. It will leave you with healthier soil that holds water better and keeps your grass green. Do this once a year and you'll need less fertilizer.
- **Use it as a soil amendment.** About one month before planting, apply 1-3 inches of compost and work it in the top 3-4 inches of soil. Your flowers and plants will thrive. Compost also can be used in the garden as a top dressing or mulch.
- **Use it with potting soil.** Mix 1 part compost with 2 parts potting soil.

Grasscycling

Vermicomposting Bin

Food Digester

Other Methods of Composting & Diversion

• Grasscycling

Grasscycling is the natural recycling of grass clippings by leaving them on the lawn after mowing. Grass clippings consist of at least 80 percent water and rapidly decompose. They enhance soil fertility – returning water, nitrogen and other valuable nutrients to the soil. You spend less time maintaining the yard and save money by using less fertilizer and water.

• Vermicomposting

Vermicomposting – composting with worms – turns food waste into a nutrient-rich soil amendment from worm castings and can be used on both houseplants and outdoor plants. Vermicomposting is relatively easy – using only a container, bedding, worms, water and food waste from your home. Worm bins can be purchased or easily made with a 3 to 12-gallon plastic storage bin. Bedding can be shredded newspaper or leaves. The worms needed for vermicomposting are red wigglers (Eisenia fetida), which can eat their weight in organic material per day and can be purchased locally or online. This project is great for indoor composting in a minimal space and is virtually odorless. It typically takes three to four months to produce vermicompost. Another product of vermicomposting is "worm tea" that is a high-quality liquid fertilizer.

• Food Digesters

Food digesters – also know as Green Cone Composters – are designed to accelerate the natural decomposition process by raising temperatures, maintaining aerobic conditions, and encouraging the growth of microorganisms. This system processes almost all household food waste including the "don'ts" like raw and cooked meat, fish, bones and dairy. The cone has a basket installed below the ground, which forms the base for an above ground solar chamber with a sealed access lid. The food waste is converted into water, carbon dioxide and a small amount of residue

without the need for mixing or turning the waste. After about five years the small quantity of residue is removed and dug into the garden soil.

- ## Bokashi

  Bokashi is an anaerobic method developed in Japan that uses inoculated bran to ferment food waste. Food waste is broken down quickly by microorganisms until it is pickled – producing "pre-compost" that can be mixed with soil. This method also creates a leachate that can be used as compost tea – a nutrient-rich fertilizer. Bokashi bran and equipment are required for this method.

Bokashi-Style Bucket

- ## Commercial Compost Haulers

  Commercial composters may have residential pick-up or drop-off options in your area. Because the material is going to a commercial compost site, more compostables can be included with food waste such as meat, bones, compostable plates and dinnerware, wax paper and spoiled leftovers. Contact your county recycling coordinator at **des.sc.gov/recyclehereSC**, or find a compost hauler in the S.C. Recycling Markets Directory at **recyclinginsc.com/directory**.

Visit **des.sc.gov/compost** to learn more about these and other methods of composting.

You can reduce food waste at home.

Food waste is the No. 1 item thrown away by Americans – accounting for 21.6 percent (38.4 million tons) of the nation's waste in 2014 according to the EPA.

Most food waste is generated at home – much of which is safe and wholesome, and could have been consumed.

It is estimated that a family of four throws away about $1,500 worth of food every year.

The Don't Waste Food SC campaign provides tips on how South Carolinians can reduce food waste at home through prevention, donation and composting. Do your part. Visit **des.sc.gov/dwfsc** to learn what you can do.

DON'T WASTE FOOD SC

Resources & Contact Information

DES' Composting Web Page

Website ..... **des.sc.gov/compost**

DES' Office of Solid Waste Reduction and Recycling

Telephone **1-800-768-7348**

Website ..... **des.sc.gov/recycle**

dhec S.C. Department of Health and Environmental Control

COMPOSTING RECYCLING NATURALLY

"Composting: Recycling Naturally – Simple Steps for Starting at Home" is a publication of **DES' Office of Solid Waste Reduction and Recycling**.

PRINTED ON RECYCLED PAPER OR-1705 7/24

Total Printing Cost:	Total Number Printed:	Cost Per Unit:	**PRINTED ON RECYCLED PAPER**