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Composting At Home

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What is Composting?

Composting is a controlled, aerobic (oxygen-required) process that converts organic materials

Check out our other EPA composting webpages:

- **Community Composting.**
<https://epa.gov/sustainable-management-food/community-composting>
- **Approaches to Composting.**
<https://epa.gov/sustainable-management-food/approaches-composting>
- **Composting Homepage.** <https://epa.gov/sustainable-management-food/composting>

into a nutrient-rich, biologically-stable soil amendment or mulch through natural decomposition. The end product is **compost**. Microorganisms feed on the materials added to the compost pile during the composting process. They use carbon and nitrogen to grow and reproduce, water to digest materials, and oxygen to breathe.

You can compost at home using food scraps from your kitchen and dry leaves and woody material from your yard.



Why Compost at Home?

Composting is nature's way of recycling. It is one of the most powerful actions we can take to reduce our trash, address climate change, and build healthy soil. By turning our food scraps and yard trim into compost, we transform our waste streams into a beneficial, value-added soil amendment and use it to protect the environment and create resilient communities.

- Composting is a resourceful way to recycle the food scraps and yard trim you generate at home all year and manage your waste more sustainably.

Additional Resources

If you are a community looking to support your constituents in their efforts to compost at home, or wish to increase participation in a curbside collection program, you may be interested in the following

- You reduce the volume of materials that might otherwise be disposed of in landfills or trash incinerators – leaves, grass clippings, yard trim, and food scraps – and prevent powerful greenhouse gases from being emitted into the atmosphere.
- Composting involves minimal effort, equipment, expense, and expertise and can be fun.
- You save money by producing a free, high-quality soil amendment – compost – which reduces your use of fertilizer and pesticides.
- You can use your compost to build healthier soil, prevent soil erosion, conserve water, and improve plant growth in your garden and yard.

resource: Composting Food Scraps in Your Community: A Social Marketing Toolkit.

<https://epa.gov/sustainable-management-food/forms/composting-food-scraps-your-community-social-marketing-toolkit>

Options for Composting at Home

There are different ways to compost at home:

- Backyard composting.
- Vermicomposting (worm composting).

If you don't have a space for composting, consider participating in a local municipal or community composting program which may collect your food scraps or offer a designated location where you can drop them off. Learn more about community composting. <https://epa.gov/sustainable-management-food/community-composting>

Composting in Your Backyard

Ingredients for Composting

The ingredients for composting include a proper balance of the following materials:

- **Carbon-rich materials (“browns”).**
- **Nitrogen-rich materials (“greens”).**
- **Water (moisture).**
- **Air (oxygen).**

What to Add to a Backyard Compost Pile

Nitrogen-Rich Materials (“Greens”)	Carbon-Rich Materials (“Browns”)
Fruit and vegetable scraps	Dry leaves
Grass clippings	Plant stalks and twigs
Coffee grounds and paper filters	Shredded paper (non-glossy, uncolored) and shredded brown bags
Paper tea bags (no staples)	Shredded cardboard (no wax coating, tape, or glue)
Eggshells (crushed)	Untreated wood chips

What to Avoid Adding to a Backyard Compost Pile

Materials
Meat, fish, and bones* †
Cheese and dairy products* †
Fats, oils, and grease* †
Cooked food (small amounts are fine)* †
Compostable foodservice ware and compostable bags †
Herbicide-treated plants and grass

Materials
Aggressive weeds/weeds with seeds
Diseased and pest-infested plants
Treated or painted wood
Pet waste and cat litter
Dryer lint
Glossy paper
Produce stickers

*These foods can attract animals.

† Backyard composting piles generally do not reach high enough temperatures to fully decompose these materials. These materials can be composted at commercial composting facilities. Check first to make sure your specific facility accepts them.

Steps for Backyard Composting

1. **Determine how you will collect and store your browns and greens.**

Collect and store your fruit and vegetable scraps in a closed container on your kitchen counter, under your sink, or in your fridge or freezer. For browns, set aside an area outside to store your steady supply of leaves, twigs, or other carbon-rich material (to mix with your food scraps).

2. **Set aside space for your compost pile and build or buy a bin.**

Choose a space in your yard for your compost pile that is easily accessible year-round and has good drainage. Avoid placing it right up against a fence and ensure there is a water source nearby. Your compost pile will break down in sun or shade. Next, choose a type of bin for your pile. Bins can be constructed from materials such as wire, wood, and cinder blocks. They can also be enclosed and include barrels and tumblers.

3. Prepare your ingredients for composting.

Before adding your browns and greens to the pile, try to chop and break them up into smaller pieces (e.g., corn cobs, broccoli stalks, and other tough food scraps). Doing so will help the materials in the pile break down faster.

4. How to build your compost pile.

Start your pile with a four- to six-inch layer of bulky browns such as twigs and wood chips. This layer absorbs extra liquids, elevates your pile and allows air to circulate at the base of the pile. Then layer your greens and browns like lasagna. If needed, add a little water to dampen the pile.

Having the right proportions of ingredients in your compost pile will provide the composting microorganisms the carbon, nitrogen, oxygen, and moisture they need to break down the materials into finished compost.

When adding browns and greens to your pile, add at least two to three times the volume of browns (such as dry leaves) to the volume of greens (such as food scraps). Always ensure your food scraps are covered by four to eight inches of dry leaves or other browns.

Air and water are the other key ingredients in your pile. To ensure air circulation, add enough browns and turn your compost occasionally. To maintain moisture in your pile, ensure your combined materials have the consistency of a wrung-out sponge.

5. Maintain your compost pile.

As the materials in your compost pile begin to decompose, the temperature of the pile will initially begin to rise, especially in the center. A backyard pile, if well maintained, can reach temperatures of 130° to 160° F. High temperatures help reduce the presence of pathogens and weed seeds.

Turning and mixing your pile from time to time will help speed up the decomposition process and aerate the pile. Use a garden fork to turn the outside of the pile inward.

Monitor your pile for moisture, odor, and temperature and make adjustments as needed.

- a. If the pile is too dry, activity in the pile will slow or cease. Moisten the pile and turn it. (Refer to the note above about maintaining moisture in your pile.)
- b. If the pile has a bad odor, it may be too wet or need more air circulation. Add more browns/dry material to the pile and turn the pile.
- c. If the pile is not heating up, mix in greens and turn the pile.

6. Harvest your finished compost.

When your compost pile is no longer heating up after mixing, and when there are no visible food scraps, allow your pile to cure, or finish, for at least four weeks. You can relocate the oldest compost at the bottom of the pile to a separate area to cure or stop adding materials to your pile. After curing, your pile will shrink to about one-third of its original size.

Compost in a well-maintained pile will be finished and ready for use in about three to five months. Left untended, a pile may take a year to decompose. The compost will look dark, loose, and crumbly and smell like fresh soil. Most, if not all, of the materials that went into the compost pile should be decomposed.

Screen or sift your finished compost to filter out materials that didn't break down - twigs, fruit pits, eggshells, and items like produce stickers and plastic. (You can make a homemade screener out of ¼ inch hardware cloth.) Pits, eggshells, etc. that you sifted out can be added back into the active pile or to a new pile.

Avoiding Rodents

Home compost piles that are well constructed and maintained properly should not attract pests or rodents.

- If using a bin, it is important to reinforce the bin with a lid and potentially a floor. There should be no holes or gaps in your bin that are larger than ¼ inch.
- Maintain the proper ratio of materials in your pile: two to three parts carbon-rich material (browns) to one part nitrogen-rich material (greens).
- Ensure you cover and bury your food scraps in your pile.
- Do not add meat, dairy, or greasy foods to your pile.



Worm Composting (Vermicomposting)

Worm composting, or vermicomposting, is another method of composting you can try

at home. It takes up little space, the materials are simple and inexpensive, and it can be done indoors or outdoors. You will need a container or bin, bedding material, worms, and food scraps. If your worm bin is properly maintained, it should not emit odors or attract pests. The resulting product is vermicompost, a soil amendment.

Steps for Vermicomposting

1. Make or buy a worm bin.

You can purchase a worm bin or make your own of untreated wood or plastic storage bins. The bin should have a tight-fitting lid and be a dark color to keep out light. If using plastic storage containers, drill air holes around the upper sides of one bin near the lid and drainage holes on the bottom of the same bin. Place the bin with the drilled holes inside the other bin. (The bottom bin will catch any liquid that drains out of the top bin.)

2. Choose a space for your worm bin.

You can keep your worm bin indoors (e.g., under a sink, in a closet or basement) or outdoors in the shade. If your bin is outdoors (e.g., garage, carport, porch, deck, or apartment balcony), insulate the bin with blankets, straw, or other materials to keep it warm during colder months. You want to maintain a bin temperature of 59° to 77° F; however, the worms can survive at 32° to 95° F if they have at least four inches of bedding.

3. **Materials for your bin.**

- a. **Worms** – Of the 9,000 species of earthworms, only seven are suitable for vermicomposting. One of the most used is the “red wiggler” or *Eisenia fetida*. It is essential to use a suitable species. Do not use worms you might find outdoors or purchase at a bait shop. Begin your bin with one pound of worms, about 1,000 individual worms. Purchase them from a worm grower or find a neighbor in your community who has a vermicomposting bin and can give you some.
- b. **Bedding** – Shred or tear non-glossy newspaper, office paper, cardboard, or dry leaves and soak the bedding material for 10 minutes. Wring it out so it feels like a moist sponge. Place it in your bin and fluff it up. Fill the bin almost halfway with the moist bedding and then add a handful of soil.
- c. **Food** – You can feed your worms most fruit and vegetables scraps, coffee grounds and paper filters, crushed eggshells, paper tea bags without staples, and crushed eggshells. Avoid citrus fruits, odorous foods like onions and garlic, meat, dairy products, greasy foods, bones, and pet waste. Chop up scraps into small pieces before adding them to the bin to allow for faster decomposition.

4. **Start your bin and feed your worms.**

Place worms on top of the bedding in the bin. Once the worms have settled in the bin, add some food scraps on the surface of the bedding. Each time you add food scraps, make sure to cover them with two inches of bedding. Adding the proper ratio of materials to the bin and covering them is important. Worms eat about 25 percent of their weight each day. As worms reproduce quickly, you can increase the amount you feed them. Always ensure the food scraps have been eaten before adding more.

5. **Harvest and use your vermicompost.**

After three to six months, you will be able to harvest your vermicompost, or worm castings, at the bottom of your worm bin. Vermicompost doesn't need to cure and can be used immediately or stored for future use.

Benefits of Using Your Finished

Compost

You can add compost to your flower and vegetable beds, window boxes, and container gardens; incorporate it into tree beds; mix it with potting soil for indoor plants; or spread it on top of the soil in your yard.



Compost can be used as a soil amendment or as a mulch. As a soil amendment, mix in two to four inches of compost to the top six to nine inches of your soil. As a mulch, loosen the top two to three inches of soil and add a three-inch layer of compost on the surface, a few inches away from plant stems and tree trunks.

Adding finished compost to your soil:

- Improves the structure and health of your soil by adding organic matter.
- Helps the soil retain moisture and nutrients.
- Attracts beneficial organisms to the soil and reduces the need for pesticides and fertilizers.
- Reduces the potential for soil erosion.
- Sequesters carbon in the soil.
- Builds resiliency to the impacts of climate change.

Additional Resources

Check out our other EPA composting webpages:

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- Approaches to Composting. <<https://epa.gov/sustainable-management-food/approaches-composting>>
- Composting Homepage. <<https://epa.gov/sustainable-management-food/composting>>

Visit the webpages below for more composting information:

- Home Composting Resources [🔗](https://ilsr.org/home-composting/) <<https://ilsr.org/home-composting/>> (Institute for Local Self Reliance): This website provides many useful resources including home composting basics, training, videos of workshops, webinars, infographics, posters, and resources in Spanish.
- Guide for Local Governments to Encourage Home Composting [🔗](https://ilsr.org/yimby-compost/) <<https://ilsr.org/yimby-compost/>> (ILSR).
- Composting, Grasscycling, and Composting with Worms [🔗](https://www.oregonmetro.gov/sites/default/files/2014/10/29/2010_home_composting_booklet.pdf) <https://www.oregonmetro.gov/sites/default/files/2014/10/29/2010_home_composting_booklet.pdf> (Oregon Metro).
- Steps for Starting Composting at Home and Choosing a Bin Type (pdf) [🔗](https://scdhec.gov/sites/default/files/library/or-1705.pdf) <<https://scdhec.gov/sites/default/files/library/or-1705.pdf>> (2.3 MB) (South Carolina Office of Solid Waste Reduction and Recycling).
- Vermicomposting Guide and Troubleshooting Tips [🔗](https://content.ces.ncsu.edu/worms-can-recycle-your-garbage) <<https://content.ces.ncsu.edu/worms-can-recycle-your-garbage>> and Resources for Households [🔗](https://composting.ces.ncsu.edu/vermicomposting-2/vermicomposting-for-households/) <<https://composting.ces.ncsu.edu/vermicomposting-2/vermicomposting-for-households/>> (North Carolina State Extension).
- Como Compostaje en su Patio Trasero (Home Composting Guide in Spanish)(pdf) [🔗](https://zerowaste.dc.gov/sites/default/files/dc/sites/zerowaste/home%20composting_spanish_final.pdf) <https://zerowaste.dc.gov/sites/default/files/dc/sites/zerowaste/home%20composting_spanish_final.pdf> (991 KB) (District of Columbia Department of Public Works).

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[Used Batteries <https://epa.gov/recycle/used-household-batteries>](https://epa.gov/recycle/used-household-batteries)

[Food Waste Prevention <https://epa.gov/recycle/preventing-wasted-food-home>](https://epa.gov/recycle/preventing-wasted-food-home)

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