

# It's easy to make your own compost!





# Composting

Instead of tossing out your yard trimmings and vegetable scraps, compost them in your own backyard.

Composting is easy and fun and will help you grow a strong, beautiful garden. Use compost to improve the quality of clay or sandy soil; reduce water and fertilizer needs; and even prevent runoff and pollution of our local rivers, lakes and streams.

Even the first-time composter can make quality compost. Use the guidelines that follow to help you get started.

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# About composting

## What is compost?

Compost is a dark, crumbly mixture of decomposed organic materials such as grass clippings, leaves, twigs and branches. It is a community teeming with microorganisms that decompose organic material and help the soil generate its own fertilizers. Compost contains nutrients, holds those nutrients in the soil until plants can use them, loosens and aerates clay soils and retains water in sandy soils.

Anything that was once alive will naturally decompose. However, some organic wastes – such as meat or dairy products – should not be composted at home.

## Recipe for success

To provide essential nutrients for the microorganisms that make compost, mix one to two parts carbon-rich materials (“browns”) such as fall leaves with one part nitrogen-rich materials (“greens”) such as grass clippings. Air and water are the other key ingredients. To introduce air, be sure to include enough brown materials – they make compost more fluffy – and turn compost occasionally. Turning also will help compost break down more quickly. Finally, add enough water to make compost as moist as a wrung-out sponge.

## Avoid rodents: compost fruit and vegetable trimmings with care!

If you add kitchen scraps to compost, or if there are rodents in your area, use a rodent-resistant composting system to prevent problems. Bins need a lid, a floor and no holes or gaps larger than a quarter inch. And remember: Never add meat, dairy, grains, grease or bread to compost. They are harmless to compost but can attract rodents.



## What to compost

### YES! Do compost:

#### Green (one part)

- fresh grass clippings
- green leaves
- plant stalks
- hedge trimmings
- vegetable and fruit scraps
- coffee grounds, filters and tea bags
- egg shells
- horse, cow and poultry manures

#### Brown (one or two parts)

- woody prunings
- leaves and twigs
- straw
- wood chips
- old potting soil
- shredded newspaper

### NO! Do not compost:

- meat or fish parts
- dairy products
- grease, cooking oil or oily foods
- bread or grains
- diseased plants\*
- weeds with seed heads and invasive weeds such as morning glory\*
- pet wastes

\* diseased plants and weeds with seeds can be placed in yard debris collection containers.

## How composting works

**Biology 101.** Composting is done by a wide variety of organisms found naturally in organic matter. They work together, feeding on your pile (and each other) to break down materials. Bacteria are the first microorganisms to go to work in your compost pile. They are the most numerous compost makers in the process. Fungi and protozoa soon join the bacteria. Later in the cycle, centipedes, millipedes, beetles and worms move in to finish the job.

**Chop it small.** If the microorganisms have more surface area on which to feed, the materials will break down faster. Chop garden debris into 6-inch pieces or smaller with pruning shears, or use a chipper/shredder or lawnmower to shred materials to help them decompose faster.

**Size matters.** Compost piles trap heat generated by the activity of millions of microorganisms. A 3-foot-by-3-foot-by-3-foot pile is considered an ideal size for hot, fast composting.

**Air and water.** Most life on earth needs a certain amount of water and air to survive. Microorganisms in the compost pile work best when the pile is as damp as a wrung-out sponge and has many air passages. Extremes of sun or rain can adversely affect the balance of air and moisture in your pile.

**Time and temperature.** The most efficient decomposing bacteria thrive in temperatures between 110 and 160 degrees Fahrenheit. The hotter the pile, the faster the composting. A good balance of carbon and nitrogen, lots of surface area within a large volume of material and adequate moisture and aeration will cause the temperature to rise over several days. Hot composting is faster and can kill weed seeds, but quality is just as good in compost made without heat.

## Composting methods

### *Which one is right for you?*

No-fuss, hot and worm composting all can produce great compost for your garden while helping you reduce waste at home. The materials you want to compost, the amount of space you have and your desired effort level can guide your choice.

### **No-fuss composting**

This is the easiest method for composting yard trimmings alone or mixed with fruit and vegetable trimmings and requires relatively little garden space (about 3 feet by 3 feet) in sun or shade. For yard trimmings only, you can use an open pile or a simple holding bin made of wire mesh or salvaged lumber.

If adding fruit and vegetable trimmings, use a rodent-resistant bin (see page 1).

Simply add chopped browns and greens to the bin or pile as you generate them. Be sure to mix moist green materials such as fruits, vegetables and grass clippings into the dryer materials of the pile so as not to attract pests. In four to 12 months you should have soil-like compost to harvest at the bottom of the pile.

### **Hot composting**

Hot composting requires a bit more effort and space but is the fastest method for composting yard trimmings alone or mixed with fruit and vegetable trimmings. It can also kill weed seeds and plant diseases.

A two- or three-bin system that allows access to the compost for turning is ideal for hot composting. Mix alternating layers of brown (high-carbon) and green (high-nitrogen) materials in the 2-1 or 1-1 ratio, and dampen the pile as you go. Fill the entire bin with this mixture.



Just after the pile temperature peaks and decreases significantly (usually within one week), turn and mix the materials into the next bin. Repeat a few times, then let compost cure for several weeks. If the material in the pile seems dry, add more water; if it didn't get hot initially, add more high-nitrogen material (or nitrogen fertilizer). The whole process commonly takes one to three months. Compost is finished when it is cool and looks nice and brown.

## Worm composting

Worm composting is a fun way to process fruit and vegetable trimmings in a small amount of space indoors or out. For details, see page 8.

## Uses for compost



**As a soil amendment.** Mix 1 to 3 inches of compost into vegetable and flower gardens each year before planting.

**As a mulch.** Spread 1 to 2 inches of compost around annual flowers and vegetables and up to 4 inches around trees and shrubs. Keep mulch a few inches away from stems to prevent plant diseases.

**As a potting mixture.** Add one part compost to two parts commercial potting soil, or make your own mixture by using equal parts of compost and sand or perlite.

**As compost tea.** You can easily make a simple compost extract by putting several handfuls of finished compost in a gallon of water, letting it sit for a few hours and then stirring vigorously. This can be applied to the soil as a mild liquid fertilizer. Aerated compost tea, made for culturing higher numbers of beneficial soil organisms, can be made using special brewers available in some local garden centers. Call Metro for a current list of sources.

## Problems and solutions for basic compost bins

### **Problem:** Pile not composting

**Too dry. Solution:** Add water until compost is moist as a wrung-out sponge, and turn or mix pile.

### **Too much brown (carbon-rich) material.**

**Solution:** Add fresh green (nitrogen-rich) material or organic nitrogen fertilizer, and turn or mix pile.

### **Problem:** Pile smells rotten or attracts flies

**Too wet or too many food scraps or lawn clippings. Solution:** Turn or mix and add brown (carbon-rich) materials. If you have no brown materials, try dry soil or potting mix.

### **Food scraps or lawn clippings exposed.**

**Solution:** Bury or mix food scraps and lawn clippings into pile and/or cover green materials with a layer of brown materials. Never dump-and-run with moist green materials.

**Problem materials. Solution:** Remove meat, dairy or grease and turn or mix pile.

### **Problem:** Rodents in bin.

Use traps or bait and follow these recommendations to avoid attracting rodents.

**Bin not rodent resistant. Solution:** Repair or replace bin so it is rodent resistant. Bin needs a lid, a floor and no holes or gaps larger than a quarter inch.

**Problem materials. Solution:** Remove meat, dairy or grease, and turn or mix pile.

**Too many food scraps. Solution:** Turn or mix pile, and add brown (carbon-rich) materials. If you have no brown materials, try dry soil or potting mix.



## More uses for yard waste and kitchen scraps

### Mulching

Use grass clippings, leaves, straw, sawdust from untreated wood, wood chips or finished compost as mulch around trees, shrubs and other perennial plantings. Mulching suppresses weeds, conserves moisture, reduces soil erosion and protects plants from cold. In annual flower and vegetable gardens, use only nonwoody mulches (e.g., grass clippings or compost) that break down quickly. Keep mulch away from stems to prevent plant diseases.

### Burying

You also can incorporate organic materials into the soil by burying them. Till grass clippings, leaves and soft garden wastes directly into garden beds. To bury vegetable and fruit scraps, dig a hole, put scraps in and chop and mix with the soil, then cover with at least 12 inches of soil.

### Grasscycling

Grasscycling is the practice of leaving grass clippings on the lawn. When you grasscycle regularly, clippings quickly decompose and release nutrients back into the lawn. You won't have to stop your mower every few minutes to empty the bag, and you don't have to spend time raking cut grass off your lawn.



Grasscycling helps the environment and can save you money. It provides free fertilizer: Leaving clippings on your lawn can satisfy more than 50 percent of the lawn's nitrogen needs and can reduce the time and money spent fertilizing. Lawns stay greener and healthier when clippings are left on them. One application of a slow-release or organic fertilizer in the fall is more than adequate for most grasscycled lawns. By using less fertilizer and fewer pesticides and herbicides, you help reduce waterway pollution.

## How to grasscycle

Use any good working mower with a sharp blade or blades. Dull blades can shred grass and make it vulnerable to diseases. If you can't mow regularly, mulching mowers may be better than traditional mowers because mulching mowers cut grass into finer pieces, allowing the pieces to filter down among the standing plants.

Generally, you should mow often enough that you never remove more than about one-third of the grass height at a time. Also, set your mower at a high setting (about 2 1/2 to 3 inches) so grass can better out-compete weeds and retain moisture.

Mowing when grass is dry will allow better distribution of clippings and reduce the chance of clogging the mower.

It can be difficult to mow during the rainy season. When lawn is wet, raise the mower level, cut what you can and compost wet clippings or use as a mulch for garden beds. In following weeks, gradually lower your mower to the proper height.

Grasscycling does not cause thatch. Thatch is made of roots and dead stems that decompose slowly. Grass clippings decompose rapidly and can help make your lawn more vigorous and durable.



## Compost with worms

### *Make kitchen scraps work for you*

Worm bins are designed for composting food waste using red worms. Vegetable and fruit scraps from the kitchen

are added regularly; the worms eat them and turn them into vermicompost, or “castings.”

## Four steps to a worm bin

### 1 The container and the worms

Build a wooden worm bin (plans are available from Metro Recycling Information), buy a plastic tub with a lid or use an old trunk. The container should be between 8 and 16 inches deep, with quarter-inch holes drilled in the bottom for drainage and sides for aeration. Raise the bin on bricks or wooden blocks for air circulation. Place a tray underneath to capture any excess moisture if you keep your bin indoors.

Cover the bin to conserve moisture, provide darkness for the worms and prevent rodents.

Worm bins can sit outdoors or in the basement, shed, garage or balcony. To maintain ideal temperatures inside the bin (55 to 77 degrees Fahrenheit), keep out of direct sun in summer and move indoors or insulate if temperatures drop below freezing in the winter.

Obtain worms from a friend's compost pile or worm bin, or purchase from a local or mail-order supplier. A list of suppliers is available from Metro Recycling Information. Generally, 1 pound of worms is needed per bin. Red worms – also called “red wigglers” or “manure worms” – are recommended because they quickly process food waste into worm compost.

### 2 Add bedding

Good bedding materials include shredded newspaper or cardboard, brown leaves, straw or untreated-wood sawdust. Fill the bin three-fourths full with bedding that has been dampened with water but isn't soaking wet. Add a handful of dirt to provide grit necessary for the worms' digestion. During the course of several months, the worms will eat the bedding. Add more bedding as necessary to keep a 4-inch layer at all times.

### 3 Feed worms

- vegetable scraps
- coffee grounds and filters
- tea bags
- fruit peels or pulp



### Do not feed worms

- meat or fish
- dairy products
- greasy or oily foods
- pet wastes

To avoid odor or pest problems, don't compost meats, dairy products, oily foods or grains. When adding food to the bin, pull aside some of the bedding and bury the food. Use a different location in the bin each time you add material.



### 4 Harvest your compost and clean out the bin

After several months, dark, crumbly compost will have collected in a layer on the bottom of the bin. This means it's time to remove some of the finished compost and add new bedding.

Begin by feeding the worms on only one side of the bin. Wait a few weeks until the worms have migrated to that side, then move the bedding from the whole bin to that side. Remove the finished compost from the other side of the bin. Use the compost on your houseplants, on your seedlings or in your garden.

Add new moistened bedding to the empty side of the bin. The next time you add food, place it under the new bedding. Worms will migrate to the new food and bedding to eat.

After several more months, repeat the procedure and remove the finished compost from the other side of the bin.

## Worm bin problems and solutions

**Problem: Unpleasant odor or flies.**

**Too wet or food scraps exposed:**

Add a 4- to 6-inch layer of dry bedding and stop feeding for a couple weeks.

**Problem materials:** Remove meat, dairy or greasy foods.

**Problem: Worms are dying.**

**Food and bedding all eaten:** Harvest finished compost and add fresh bedding and food.

**Too dry:** Add water until moist as a wrung-out sponge.

**Extreme temperatures:** Move bin to a location where temperature is between 55 and 77 degrees Fahrenheit, or insulate to ensure interior temperature is in that range.

**Problem: Rodents in bin.**

Use traps or bait and follow these recommendations to avoid attracting rodents.

**Bin not rodent resistant:** Repair or replace bin so it is rodent resistant. Bin needs a lid, a floor and no holes or gaps larger than a quarter inch.

**Problem materials:** Remove meat, dairy or grease.

**Too many food scraps:** Add a 4- to 6-inch layer of dry bedding and stop feeding for a couple weeks.

**“Problem”: Sow bugs, beetles and creepy-crawlies in bin. (Not a problem!)**

Healthy worm bins are home to a community of beneficial fungi, insects and other organisms.

## Composting demonstration centers

### *Learn more, and see the results*

Each site features active residential-scale compost bins, a worm bin and interpretive signs. The centers are open to the public. Individuals are welcome to take self-guided tours and attend scheduled workshops. Centers are owned by Clackamas Community College and Portland Parks and Recreation.

## Directions to the composting centers

### **Metro Natural Techniques Demonstration Garden.**

6700 SE 57th Ave., Portland. From Southeast Woodstock and 57th Avenue, travel south on 57th Avenue to Cooper Street, and park on street. The demonstration garden is on east side of street next to the Brentwood Community Garden. Call Metro Recycling Information for hours and staffing details.

### **Clackamas Community College site.**

19600 S. Mollala Ave., Oregon City. Take Park Place/Mollala exit off Interstate Highway 205. Follow the signs to Clackamas Community College via state Route 213. Turn left on Beaver Creek Road. Turn right on Clairmont Drive to enter campus. At first intersection, turn left onto North Douglas Loop. The center is directly across from the baseball field. Parking is next to the site.

### **Fulton Community Gardens site.**

Southwest Barbur Boulevard and Miles Street in the Burlingame neighborhood of Southwest Portland. Enter from Southwest Miles Street. Park in the Fulton Park Community Center parking lot. Passenger parking for disabled drivers or passengers is along gravel road adjacent to the site.

### **Leach Botanical Garden site.**

6704 SE 122nd Ave., Portland. This site is on Southeast 122nd Avenue, three blocks south of Foster Road. Park in the main parking lot next to Johnson Creek, then walk a quarter mile, following signs, across the creek and up the hill to the site.

**Please note:** The centers do not accept public drop-off of yard debris. Call Metro for referral to drop-off locations for materials you do not want to compost at home.

## Information and resources

### Compost bins

Earth Machine compost bins are available at a deeply discounted price at the MetroPaint store at 4825 N. Basin Ave. on Swan Island in Portland. Bin floors are also now available.

### Metro Recycling Information: 503-234-3000

Call for information on compost bins, composting and natural gardening seminars and tours, natural gardening shopper's guides and other composting resources.

### [www.oregonmetro.gov/compost](http://www.oregonmetro.gov/compost)

Visit our web site for additional information and resources.





Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.


### **Your Metro representatives**

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