

What is composting? Composting is a process in which organic materials such as food scraps, paper, leaves, and more are broken down more quickly thanks to optimal conditions for decomposers. Decomposers are tiny organisms both seen and unseen that break down dead or decaying material for their own life needs. Breaking down the organic material in turn makes nutrients available in the soil for plant growth: an amazing regenerating system that keeps life going and growing.

How does composting work? Composting works in three stages. Visible decomposers like earthworms and roly-polies do their part, but there's plenty of invisible work happening too. First, mix an apple core into your compost pile, and mesophilic microorganisms (microorganisms that live in temperatures of 68 to 113 degrees Fahrenheit) will begin to break it down.

The second stage begins only after a couple of days. At this point, thermophilic microorganisms (microbes that live in very high temperatures) will start to decompose your apple core. This stage can last from days to months. During this stage, some compost piles can become so hot that the temperature can kill off beneficial microbes. To prevent this tragedy, you may want to turn your compost every couple of weeks. Turning the compost also introduces more oxygen into the compost, of great benefit to the decomposers.

During the third stage, thermophilic microbes have finished what *they* need from the organic material, and step back, so to speak. The compost pile begins to cool down, enabling the mesophilic microorganisms to have one more swing at it. This finishing process takes several months.

What makes a successful compost system? There are 4 main components that lead to a successful compost system: air, moisture, browns, and greens. Your compost pile should have adequate access to **oxygen**, which keeps decomposers alive and thriving. It should also have a healthy balance of **browns** and **greens**.

Browns are sources of carbon such as branches, twigs, shredded paper, and dead leaves. This carbon gives decomposers energy for living. **Greens** are sources of nitrogen such as fruit scraps, grass clippings, and vegetable waste. The nitrogen helps decomposers function. Depending on your compost system, you might even need to add **a bit of water** to your compost so that the soil feels moist like a wrung out sponge, but not soggy.

Basically, you are managing a good home for your decomposers. If they're thriving, they're decomposing the compost material at a good rate. If they lack something they need, they'll slow down. In general, adding more browns than greens in your compost pile will create the best conditions for decomposers and thus decomposition. You can often tell what your decomposers need by the state of your compost. If it's slimy, add more browns (carbon). If it's dry, add more greens (nitrogen). For best results, consider "lasagna-style" composting by covering each layer of green (nitrogen) inputs with a layer of brown (carbon).

Do I need earthworms? Although worms are helpful in turning waste into "black gold," they are not necessary. There are plenty of invisible micro-organisms also doing this work.

What kinds of decomposers other than bacteria might I see (or want) in my composter? Some decomposers you might see in your compost are earthworms, beetles, sow bugs (roly-polies), millipedes, earwigs, and springtails. You might also notice helpful fungus including mushrooms, but the bacteria will be invisible. Compost piles also attract *predators* of decomposers, such as the centipede.

What are some other methods of backyard or household composting?

- Open air composting consists of a compost pile of "greens" and "browns" in your backyard.
- Direct composting is burying your scraps into holes or trenches in the ground. This method generally takes a long time to decompose organic matter.
- Tumbler composting utilizes a container that you can rotate to turn and mix your compost, expediting the process.
- Worm farms (verm-composting) uses a container with soil, food scraps, and worms. It's a good year-round project for basement composting.
- Your Earth Machine: a slow yet reliable composter, more information in your manual.

For more info on different composting methods, check out: <https://directcompostsolutions.com/8-methods-composting/>

Why shouldn't I put _____ in my compost?

- black walnut tree leaves or twigs because they may release chemicals that could harm plants
- diseased or insect-ridden plants because the diseases or insects may contaminate other plants
- chemically treated yard trimmings because it could kill organisms that help break down material in your compost

- pet wastes because they may contain harmful pathogens
- dairy products because they may attract pests
- fats, grease, lard, or oils because they may attract pests
- bones and scraps from meat because they may attract pests

Check out <https://www.epa.gov/recycle/composting-home> for more information on what you should not add to your compost and why.

What other composting tips do you have? Consult your easy-to-read Earth Machine manual or contact composting volunteer expert and Rockbridge Area Master Gardener, Phyllis Fevrier, at 540-460-9298 and leave a message. She will return your call. Other useful websites:

<https://www.epa.gov/recycle/composting-home> - government site

<https://modernfarmer.com/2017/02/how-to-compost/> - commercial site

<http://dpw.co.santa-cruz.ca.us/Portals/19/pdfs/E-machine.pdf> - 1-page tip sheet from municipality

Boxerwood intern, Belen Delgado Mio, consulted the following resources in the creation of this FAQ:

“Composting At Home.” *EPA United States Environmental Protection Agency*, Environmental Protection Agency, 15 July 2020, www.epa.gov/recycle/composting-home.

“Decomposers.” National Geographic Society. 17 Dec. 2019, www.nationalgeographic.org/encyclopedia/decomposers/.

Ross, Rachel. “The Science Behind Composting.” *Live Science*, Future US, 12 Sept. 2018, www.livescience.com/63559-composting.html.