

Cheat Sheet: Composting



According to the EPA, in 2015, almost 24 percent of the U.S. municipal solid waste stream was composed of food remnants and yard trimmings. We could significantly reduce the amount of waste going to landfills by diverting these materials to another use.

Enter: composting. Grass clippings, food scraps, and yard waste are all ideal materials to add to a compost pile. Starting your own compost pile not only cuts down on your waste output, it creates a great soil booster for your garden as well.

Have you been thinking about composting, but unsure about taking on the challenge? Understanding the basics of composting can make it a less intimidating process.

What Is Composting?

Composting is the natural decomposition process of organic materials — including grass clippings, leaves, vegetable scraps, coffee grounds, and woodchips — sped up by a deliberate strategy in a concentrated environment. The resulting material (known as “humus”) provides a wonderful nutritional supplement for the soil.

For households: Composting allows you to reduce your waste output while turning your kitchen scraps and yard trimmings into a beneficial soil amendment for your garden.

For small-scale farms: Composting is a way to manage the residual plant and animal material the farm generates and put it to good use as a fertilizer and soil-builder for future crop production.

The Science of Composting

So, how does composting work? According to Nance Trautman and Elaina Olynciw of [Cornell University](#), microorganisms break down organic matter, producing heat, carbon dioxide, water, and humus in the process.

When composting is done correctly, a pile undergoes three optimal phases:

1. The **mesophilic**, or moderate temperature phase, lasts two to three days.
2. The **thermophilic**, or high temperature phase, lasts anywhere from three days to several months, depending on what is in the pile.
3. The **cooling and maturation** phase lasts several months.

In the first stage, mesophilic microorganisms quickly break down the easily degradable materials in the pile. The microorganisms' output of this breakdown is heat, so the temperature in the pile rises. High temperatures in a compost pile are necessary for the next phase — where thermophilic (meaning “heat loving”) microbes replace the mesophilic ones.

Thermophilic microbes then kill existing pathogens and accelerate the breakdown of complex carbohydrates, fats, and proteins that exist in the pile. Note that if temperatures in the pile rise above 149 degrees Fahrenheit, even the heat-loving microbes can be killed, slowing the rate of decomposition.

Because piles can get too hot, it's essential to aerate, or turn the pile, for the cooling phase to be reached. The cooling phase is where the high microbial activity of the other two phases is reduced, allowing the compost to mature for use in your garden.



Regularly turn your compost to ensure all parts of the pile get enough oxygen. Image: Adobe Stock

What to Put in Your Compost Pile?

Knowing what materials should go into your backyard compost pile is essential for a successful outcome.

You need a balance of “green” (nitrogen rich) and “brown” (carbon rich) materials to ensure a sufficient amount of oxygen the compost pile does not become anaerobic. Anaerobic decomposition occurs as a result of an improper chemical balance, mainly a lack of oxygen.

To ensure sufficient oxygen, it’s important to aerate, or turn the pile. If the pile is not properly aerated or has too much nitrogen and not enough carbon, it may develop a bad odor. A well-managed compost pile should not smell bad. So, how do you achieve the proper chemical balance? Let’s start with the greens.

GREEN MATERIALS

Green materials are rich in nitrogen. Some examples of green materials include:

- **Food scraps:** Fruit and vegetable scraps are great for your compost pile. Never add animal-based leftovers (fat, meat, cheese, milk, etc.); the oils and fats are not conducive to a backyard composting operation.
- **Fresh grass clippings**
- **Manure:** If you have access to manure from horses, cows, sheep, goats, or chickens, it is a great compost ingredient; it speeds up the decomposition process. It is not a requisite for a successful compost pile, however. Never use manure from carnivores.
- **Plants and plant cuttings:** Just-picked weeds from around the backyard (as long as there are no developed seeds or seed heads) are permissible, as are flower tops. Green leaves from a freshly cut branch work as well (just make sure to shred them).
- **Coffee grounds**

Tip: Freeze Your Scraps!

To reduce the number of trips to the backyard to dispose of kitchen scraps, put them in an airtight container and freeze them. This also helps to avoid the smell of old food.

Additionally, freezing will assist in achieving chemical balance in your compost pile. For example, if you have an overload of “green” food scraps from last night’s dinner party and you do not have the necessary “brown” materials to balance out the pile, freeze the scraps for a while until you have enough “brown” to add to the pile.

BROWN MATERIALS

Brown materials, on the other hand, are rich in another crucial ingredient, carbon. Carbon gives the microbes the energy they need to work. It is useful to shred most brown ingredients to reduce the workload for microbes and enable decomposition to happen more quickly.

Some examples of brown materials include:

- **Dead, dry leaves**
- **Hay and straw**
- **Simple paper products:** Newspaper, paper, and cardboard
- **Crushed eggshells**
- **Tea bags and loose-leaf tea**
- **Wood ashes and sawdust:** Use sparingly. Wood ashes can make the pile very alkaline, which limits microbial activity. And sawdust can take a long time to break down.

Moisture in Your Compost Pile

According to the EPA, another important factor to keep in mind is the moisture content of the pile, since the hard-at-work microorganisms need an adequate amount to survive. Water also transports nutrients and organic matter throughout a compost pile, which keeps the pile from becoming stagnant.

But how do you tell if you need to add water? According to the [New York City Compost Project](#), “Optimal moisture levels for composting occur when materials are about as moist as a wrung-out sponge — obviously moist to the touch, but yielding no liquid when squeezed.”

For advanced-level composting, you can get a [compost moisture meter](#) to measure your pile’s moisture level more precisely, but this isn’t necessary. If you get regular rainfall, it will often do the trick, as it provides a slow soak that is optimal for infiltrating a compost pile. However, if you live in a drier climate, you will probably need to water your pile. Make sure to add water slowly and to turn the pile to incorporate the water so it reaches all sections.

Where you live and your particular climate will have a significant effect on your pile; you may need to do some experimenting.

- Haley Paul July 30, 2019 Earth911.com