



COMPOSTING FOR THE HOMEOWNER

Composting can improve soil health.

Compost is decomposed organic material. Compost is made with material such as leaves, shredded twigs, and kitchen scraps from plants. To gardeners, compost is considered "black gold" because of its many benefits in the garden. Compost is a great material for garden soil. Adding compost to clay soils makes them easier to work and plant. In sandy soils, the addition of compost improves the water holding capacity of the soil. By adding organic matter to the soil, compost can help improve plant growth and health.

Composting is also a good way to recycle leaves and other yard waste. Instead of paying a company to haul away leaves, you can compost the leaves and return the nutrients to your garden. Instead of buying peat moss, save money and make your own compost!

The composting process

The composting process involves four main components: organic matter, moisture, oxygen, and bacteria.

Organic matter includes plant materials and some animal manures. Organic materials used for compost should include a mixture of brown organic material (dead leaves, twigs, manure) and green organic material (lawn clippings, and fruit rinds).

- Brown materials supply carbon, while green materials supply nitrogen.
- The best ratio is 1 part green to 1 part brown material.
- Shredding, chopping or mowing these materials into smaller pieces will help speed the composting process by increasing the surface area.
- For piles that have mostly brown material (dead leaves), try adding a handful of commercial 10-10-10 fertilizer to supply nitrogen and speed the compost process.

Moisture is important to support the composting process. Compost should be comparable to the wetness of a wrung-out sponge.

- If the pile is too dry, materials will decompose very slowly. Add water during dry periods or when adding large amounts of brown organic material.
- If the pile is too wet, turn the pile and mix the materials. Another option is to add dry, brown organic materials.

For most efficient composting, use a pile that is between 3 feet cubed and 5 feet cubed (27-125 cu. ft.).

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Oxygen is needed to support the breakdown of plant material by bacteria. To supply oxygen, you will need to turn the compost pile so that materials at the edges are brought to the center of the pile. Turning the pile is important for complete composting and for controlling odor.

- Wait at least two weeks before turning the pile, to allow the center of the pile to "heat up" and decompose.
- Once the pile has cooled in the center, decomposition of the materials has taken place.
- Frequent turning will help speed the composting process.

Bacteria and other microorganisms are the real workers in the compost process. By supplying organic materials, water, and oxygen, the already present bacteria will break down the plant material into useful compost for the garden. As the bacteria decompose the materials, they release heat, which is concentrated in the center of the pile.

- You may also add layers of soil or finished compost to supply more bacteria and speed the composting process. Commercial starters are available but should not be necessary for compost piles that have a proper carbon to nitrogen ratio (1 part green organic material to 1 part brown organic material).
- In addition to bacteria, larger organisms including insects and earthworms are active composters. These organisms break down large materials in the compost pile.

How long does it take?

The amount of time needed to produce compost depends on several factors, including the size of the compost pile, the types of materials, the surface area of the materials, and the number of times the pile is turned.

For most efficient composting, use a pile that is between 3 feet cubed and 5 feet cubed (27-125 cu. ft.). This allows the center of the pile to heat up sufficiently to break down materials.

Smaller piles can be made but will take longer to produce finished compost. Larger piles can be made by increasing the length of the pile but limiting the height and the depth to 5 feet tall by 5 feet deep; however, large piles are limited by a person's ability to turn the materials. You may also want to have two piles, one for finished compost ready to use in the garden, and the other for unfinished compost.

If the pile has more brown organic materials, it may take longer to compost. You can speed up the process by adding more green materials or a fertilizer with nitrogen (use one cup per 25 square feet).

The surface area of the materials effects the time needed for composting. By breaking materials down into smaller parts (chipping, shredding, mulching leaves), the surface area of the materials will increase. This helps the bacteria to more quickly break down materials into compost.

Finally, the number of times the pile is turned influences composting speed. By turning more frequently (about every 2-4 weeks), you will produce compost more quickly. Waiting at least two weeks allows the center of the pile to heat up and promotes maximum bacterial activity. The average composter turns the pile every 4-5 weeks.

When turning the compost pile, make sure that materials in the center are brought to the outsides, and that materials from the outside edges are brought to the center.

With frequent turning, compost can be ready in about 3 months, depending on the time of year. In winter, the activity of the bacteria slows, and it is recommended that you stop turning the pile after November to keep heat from escaping the pile's center. In summer, warm temperatures encourage bacterial activity and the composting process is quicker

Using compost in the yard

Incorporate compost into your garden as you prepare the soil in the spring. Cover the area with 3-4 inches of soil and till it in to at least the upper 6 inches of soil. Add compost to soil in vegetable gardens, annual flower beds, and around new perennials as they are planted. You may also use compost as mulch around flower beds, vegetable gardens, or around trees or shrubs in landscape beds. Apply a 3-inch layer. Be careful not to apply mulch close to the main stem or trunk of the plant.

How to Begin

Layering is the recommended method for starting a compost pile.

Layering is similar to making lasagna, as you add thin, uniform layers of materials in a repeated pattern. Once the compost pile is active, you can incorporate new material into the center of the pile or you can mix it in when turning the pile.

Start your compost pile on bare ground, removing the sod or existing vegetation. Contact with the soil will provide bacteria needed for composting. Do not place the pile on concrete or asphalt. You may also place a pallet underneath the pile if poor drainage beneath the pile is a concern.

Compost Layer 1

Add a 6- to 8-inch layer of organic matter, both brown and green. Do not pack the materials in, as this limits air flow and oxygen needed by bacteria.

Compost Layer 2

Add a starter material, such as animal manures (see the list of acceptable types), fertilizers, or commercial starters. These materials help to heat up the pile by providing nitrogen for the bacteria and other microorganisms.

Select one of the following:

1- to 2-inch layer of fresh manure from a grain eating animal, or
1 cup of 10-10-10 or 12-12-12 fertilizer per 25 square feet, or
a commercial starter, following all label directions

Compost Layer 3

Add a 1- to 2-inch layer of top soil or finished garden compost. This is done to introduce the microorganisms to the pile. Avoid using soil recently treated with insecticides and also avoid using sterile potting soil.

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Composting Materials

What to compost

- Leaves
- Some manures (cow, horse, sheep, poultry, rabbit, llama)
- Lawn clippings
- Vegetable or fruit wastes, coffee grounds
- Shredded newspaper or white, unglazed office paper
- Trimmed plant materials
- Shredded stems and twigs

Don't use:

- Meat or dairy scraps
- Some manures (cat, dog, swine, and carnivore manures)
- Glazed, color printed magazine paper
- Diseased plants or plants with herbicides applied

Types of Compost Bins

Holding units are low maintenance, and are good choice for those with limited space, such as apartment dwellers. These units do not require turning, however the lack of aeration causes the composting process to take 6 months to 2 years. Holding units are available from stores and catalogs.

Portable bins are similar to holding units, except that they can be taken apart and moved. Materials can also be mixed with this type of bin. Plastic units are available for purchase, or you may construct a bin from wire fencing framed in wood.

Turning units are designed so that they may be aerated. Turning units produce compost faster because they supply oxygen to the bacteria in the pile. These units may also have less odor problems, which are associated with poor aeration.

- Turning units may be either a series of bins or a structure that rotates, such as a ball or barrel. These systems often cost more and are more difficult to build. Materials must also be saved until a unit can be filled to the correct level. Once these units are filled and the turning process begins, new materials should not be added.

Heaps are an option for those who do not wish to build or purchase a bin structure. Turning the heap is optional, but remember the composting process will be slowed if the pile is not turned. Woody materials may take a very long time to decompose with this method, and food scraps may attract pests.

Sheet composting can be done in the fall. With this method, a thin layer of materials such as leaves (that have not been composted) are worked into the garden. By spring, the material will be broken down. The decomposition process ties up soil nitrogen, making it unavailable to other plants. Because of this, sheet composting should only be done in the fall when the garden is fallow.

Soil incorporation is also known as trench composting. Organic material are buried in holes 8-15 inches deep, and then covered with soil dug from the hole. Decomposition takes about a year, as limited oxygen slows the process. It is recommended to avoid planting that area for a year, as the nitrogen available to plants may be limited by the decomposition process.

Where to place the compost

Placing the compost bin in your yard depends on both functional and aesthetic needs.

- For the compost bin to function properly, place the compost pile in an area with good air circulation. Do not place the pile so that it is in direct contact with wooden structures, as this will cause decay. It is best to locate the pile in partial shade, but this is not a necessity.
- You may want to locate it close to the garden and close to a water source. If kitchen scraps will be added regularly, it may be more convenient to have the pile near the kitchen.
- You may also want to screen the pile from view with a fence or by placing it behind shrubs or a taller structure. You may also wish to avoid placing the pile near outdoor entertaining areas.

Troubleshooting

If the compost has a bad odor:

- Problem: Not enough air. Not enough water. Too small.
- Solutions: Turn it, add dry material if the pile is too wet.

If the center of the pile is dry

- Problem: Lack of nitrogen.
- Solutions: Moisten and turn the pile.

If the compost is damp and warm only in the middle

- Problem: Pile is too small.
- Solutions: Collect more material and mix the old ingredients into a new pile.

If the heap is damp and sweet-smelling but still will not heat up

- Problem: Lack of nitrogen.
- Solutions: Mix in a nitrogen source like fresh grass clippings, manure or fertilizer.

If large, undecomposed items are still in the mix

- Problem: Low surface area.
- Solutions: Remove items, and chop or shred large items.

Answers to your composting questions

Are oak leaves too acidic to be used for compost?

No, oak leaves in compost will not create an acidic soil. However, you need to be careful when applying walnut leaves because they contain a growth inhibitor to which some plants are sensitive. Walnut leaves must be thoroughly composted before applied to the garden.

Are there any plants that I should not use compost around?

The pH of compost is slightly basic (or alkaline), thus avoid adding compost to acid loving plants such as azaleas or hollies.

Can I add sawdust to the compost pile?

Yes, sawdust can be added to the compost pile. However, compost has a very high amount of carbon, so if you add sawdust, add nitrogen (such as a cup of 10-10-10 fertilizer per 25 square feet). To be safe, avoid adding sawdust from lumber treated with CCA (chromated copper arsenic).

How do I know when compost is ready?

Compost is ready to use when it is dark brown, crumbly and has an earthy odor. Compost is ready when it is fluffy and should not be powdery. The original materials that were put into the compost pile should not be recognizable, except for small pieces of stems.

Can I add weeds to the compost pile?

Weeds will not be a problem for compost piles that heat up properly. However, if the pile does not reach high enough temperatures, weed seeds may not be destroyed and could pose a future problem.

Reference:

University of Illinois Extension. *Composting*. Retrieved from <https://extension.illinois.edu/soil/composting> on December 14, 2022.