



Making Compost From Yard Waste

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What Is Compost?

Compost is one of the most valuable resources for enhancing your landscape, and it is virtually free. The leaves you rake, the grass you mow, and the branches you trim are some of the ingredients you can use to make compost. Finished compost is dark and has a pleasant smell. It is produced when

organic matter — such as garden, lawn, and kitchen waste — is broken down by bacteria and fungi.

Use compost throughout your landscape: dig it into gardens and flower beds, add it to the soil when renovating your lawn, or put it through a sieve and use it in potting soil.

Keys to Good Composting

Carbon-to-nitrogen ratio (C:N ratio) by volume –

Combine a mixture of dry leaves; old, dead plant material; or other sources of carbon with fresh, green plant material or manure for nitrogen. The volume of the brown plant material should equal or be up to three times as much as the green plant material in the pile (C:N ratios of 1:1 to 3:1 by volume).

Presence of microorganisms – Compost inoculants, starters or activators, garden soil, and other such materials do NOT need to be added to the piles because the microorganisms can be found in sufficient numbers on the plant material.

Moisture level – The pile should have the moisture of a wrung-out sponge. Add water as needed.

Oxygen level – A compost pile should be turned periodically to promote decay of its contents. Turning the pile adds oxygen, so the more you turn it, the faster it breaks down.

Particle size – The finer the particle size, the more surface there is for microorganisms to work. To speed

compost formation, chop or shred leaves and larger materials before adding them.

Making Compost

Locate your compost pile on a well-drained site that would benefit from nutrients running off the pile. Your pile can be built gradually in layers and then turned to mix.

1. To ensure good aeration and drainage, put down a 3-inch layer of coarse plant material such as small twigs or chopped corn stalks, or a wooden pallet.
2. Next, add about 9 inches of dry leaves or other old, dead plant material (carbon) from your landscape.
3. Provide nitrogen for compost-promoting microorganisms by adding 3 to 9 inches of fresh plant material, kitchen waste, or fresh manure. If fresh nitrogen sources are unavailable, organic fertilizer, blood meal or cottonseed meal may be used to provide the necessary nitrogen.
4. Chop or shred all plant materials before adding them to the pile for faster composting.
5. Moisten the pile as you add leaves and other dry material (about as moist as a wrung-out sponge).

Mix the materials thoroughly and add additional layers if sufficient material is available. Shape the pile so its center is lower than its sides to help water flow into the pile during dry weather. Keep the pile moist but not soaking wet. It should heat up within a few days. If not, it may lack nitrogen or moisture or be too small. If the pile smells bad, it may be too tightly packed for oxygen circulation, have too much nitrogen-containing material, or be too wet. Turn the pile and add coarse material to increase air space, if needed, or add old, dead plant material (carbon) to balance excess fresh, green material (nitrogen). Once a month, turn the pile, moving the top and outside materials to the inside and vice versa.

The plant materials should decompose into compost within four or five months in warm weather, longer under cool or dry conditions. The center of the pile should reach 140 degrees Fahrenheit for over 3-5 days to kill most weed seeds, insects and eggs, and disease organisms.

Composting may be completed in one to two months if the materials are shredded, kept moist, and turned several times to provide good aeration. Spread it in the garden and dig it in to offer your soil and plants the benefits of its many virtues.

The Compost Bin

A compost pile can be as plain or fancy as you want — you don't even need a bin to make compost. But if you plan to produce compost regularly, consider a permanent compost bin. For convenience and aesthetics, you can choose from numerous commercial composters or construct your own from wooden planks, concrete blocks, used freight pallets, hardware cloth, or chicken wire (figure 1). Consult homeowner association regulations and local ordinances before building or purchasing a compost bin to determine if there are limitations on the kind, size, and location of compost bins permitted in your neighborhood.



Figure 1. Two bins constructed from wooden pallets sit against an outdoor fence with brown and green plant material mounded between them. Similar plant material is piled inside each bin. In the foreground, a woody trunk grows from weedy ground and a frame covered with wire mesh is propped on the ground at a 45-degree angle.

Before purchasing a commercial composter, determine if it will work effectively in your landscape. It should be well-built, economical according to your needs, easy to assemble, and have easy access for turning the compost.

Some gardeners build separate bins for each stage of the compost process: one for fresh plant refuse, another for the actively composting pile, and a third for the finished compost. When building your own bin, keep one side open for easy access. Also, leave spaces between blocks or planks for aeration because air is essential to the rapid composting of organic materials.

The size of the compost pile determines how effective it will be. Piles smaller than 27 cubic feet (3 feet by 3 feet by 3 feet) do not hold sufficient heat for the composting to be effective; piles larger than 125 cubic feet (5 feet by 5 feet by 5 feet) should usually be avoided for backyard composting, as they are difficult for individuals to manage.

Compost Your Yard and Kitchen Wastes

Grass clippings and fall leaves are abundant compost materials for most homeowners. Weeds free of seedheads and crop residues, such as vines and leaves, are other sources (figure 2). Collect vegetable and fruit peelings, coffee grounds, crushed eggshells, and similar kitchen waste for your compost pile. Acquire additional materials, such as sawdust (if not from treated wood), manure, hay, or straw from sources such as stables and carpenter shops.



Figure 2. Looking down into a 3-sided wooden bin, green grass clippings and brown leaves are densely piled. The walls of the bin are constructed from wooden pallets which have spaces between planks.

Unless optimum compost pile size (always 3 ft. x 3 ft. x 3 ft. or larger) and temperatures (above 140°F for over 3-5 days) throughout the entire pile can be maintained and guaranteed, do not include meat waste (it attracts

animals and pests and causes odors), reproductive parts of undesirable weeds (seeds, rhizomes, and stolons), diseased plant material, or plant material that has been treated with herbicides.

Certain herbicides (e.g., aminopyralid, clopyralid, picloram, triclopyr, fluroxypyr) used to kill broadleaf weeds in lawns, pastures, and hay fields may NOT completely be degraded even by composting under optimal conditions. Always ask your source of manure or straw about any herbicides that may have been used on their fields.

Benefits of Composting

- Compost improves the structure of soil. With the addition of compost, sandy soils hold water better and clay soils drain faster.
- Compost reduces soil erosion and water runoff. Plant roots penetrate compost-rich soil easier and hold the soil in place. Water can run down into lower soil layers rather than running off.
- Compost provides food for earthworms, soil insects, and beneficial microorganisms.
- Compost assists the soil in holding nutrients, lessening the need for chemical fertilizers and preventing the leaching of nitrogen into water.
- Compost promotes healthy plants that are less susceptible to diseases and insect pests, reducing the need for pesticides.
- Composting in your backyard recycles wastes that might otherwise go to landfills. Leaves, grass, and debris — often raked into the street for collection — tend to clog storm drains and street gutters and are costly to collect, but they make excellent compost materials.

For more information on composting, plant selection, planting, cultural practices, and environmental quality, contact your local Virginia Cooperative Extension office. If you want to learn more

about horticulture through training and volunteer work, ask your Extension agent about becoming an Extension Master Gardener Volunteer. Horticultural information is also now available on the Internet by visiting the Virginia Cooperative Extension website at www.ext.vt.edu.

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Sources

Christian, Archer H., Gregory K. Evanylo, and R. Green. 2009. Compost: What Is It and What's It to You? Virginia Cooperative Extension publication 452-431. <http://pubs.ext.vt.edu/452/452-231/452-231.html>.

Christian, Archer H., Gregory K. Evanylo, and James W. Pease. 2009. On-Farm Composting: A Guide to

Principles, Planning, And Operations. Virginia Cooperative Extension publication 452-232. http://pubs.ext.vt.edu/452/452-232/452-232_pdf.pdf.

Evanylo, Gregory K., Caroline A. Sherony, James H. May, Thomas W. Simpson, and Archer H. Christian. 2009. The Virginia Yard-Waste Management Manual, 2nd ed. Virginia Cooperative Extension publication 452-055. http://pubs.ext.vt.edu/452/452-055/452-055_pdf.pdf.

Relf, Diane. 2009. Composting. Virginia Cooperative Extension publication 426-325. <http://pubs.ext.vt.edu/426/426-325/426-325.html>.

Sherman, Rhonda. 2022. "Introduction to Home Composting." North Carolina State Extension. <https://composting.ces.ncsu.edu/home-composting/>

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