



Composting

Composting turns household wastes into valuable fertilizer and soil organic matter.



CONSERVATION
in your
BACKYARD
WE CAN ALL HAVE A HAND IN IT

Decomposing organisms consist of bacteria, fungi, and larger organisms such as worms, sow bugs, nematodes, and numerous others.

The final product, humus or compost, looks and feels like fertile garden soil. This dark, crumbly, earthy-smelling stuff works wonders on all kinds of soil and provides vital nutrients to help plants grow and look better.



Composting can be as simple or involved as you would like. It depends on how much yard waste you have and how fast you want results.

Decomposing organisms need four key elements to thrive: nitrogen, carbon, moisture, and oxygen. For best results, mix materials high in nitrogen (such as clover, fresh grass clippings, and livestock manure) and those high in carbon (such as dried leaves and twigs). Moisture is provided by rain, but you may need to water or cover the pile to keep it damp. Be careful not to saturate the pile. Turning or mixing the pile provides oxygen. Frequent turning yields faster decomposition.



Turning the compost over frequently exposes it to oxygen and helps it decompose faster.

Getting Started

Cold or slow composting

With cold or slow composting, you can pile grass clippings and dry leaves on the ground or in a bin. This method requires no maintenance, but it could take a year or more for the pile to decompose. Cold composting works well if you don't have time to tend the compost pile at least every other day, have little yard waste, or are not in a hurry to use the compost.

Keep weeds and diseased plants out of the mix since the temperatures reached with cold composting may not be high enough to kill the weed seeds or disease-causing organisms. Add yard waste as it accumulates. Shredding or chopping speeds up the process. To easily shred material, run your lawn mower over small piles of weeds and trimmings.

Cold composting has been shown to be better at suppressing soil-borne diseases than hot composting. Cold composting also leaves more undecomposed bits of material, which can be screened out if desired.

Do not use diseased plants, meat scraps that may attract animals, or dog or cat manure which can carry disease.



Compost bins may be as simple as a ventilated garbage can; built with wire mesh; picket fence; pressure treated wood; brick or concrete blocks; and other materials. Treated lumber should be evaluated to ensure that lumber is approved for organic farms.



Many materials can be added to a compost pile, including leaves, grass clippings, straw, woody brush, vegetable and fruit scraps, coffee grounds, livestock manure, sawdust, and shredded paper.



Composting can be as simple or as involved as you would like, and depends on how much yard waste you have, how fast you want results, and the effort you are willing to invest.



Treated lumber composting bin.



Hot composting

Hot composting requires more work, but with a few minutes a day and the right ingredients you can have finished compost in a few weeks depending on weather conditions.

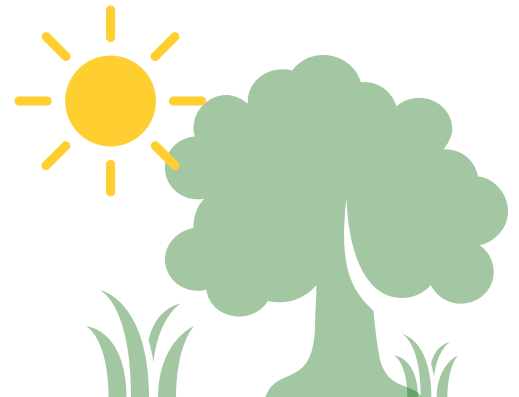
The composting season coincides with the growing season. When conditions are favorable for plant growth, those same conditions work well for biological activity in the compost pile. However, since compost generates heat, the process may continue later into the fall or winter. Hot piles do best when high-carbon material and high-nitrogen material are mixed in a 1-to-1 ratio.

A pile with the minimum dimensions of 3' x 3' x 3' is needed for efficient heating. For best heating, make a heap that is 4 or 5 feet in each dimension.

As decomposition occurs, the pile will shrink. If you don't have this amount at one time, simply stockpile your materials until a sufficient quantity is available for proper mixing.

Hot piles reach 110 to 160 degrees Fahrenheit, killing most weed seeds and plant diseases. Studies have shown that compost produced at these temperatures has less ability to

suppress diseases in the soil since these temperatures may kill some of the beneficial bacteria necessary to suppress disease.



Step 1



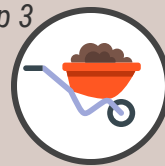
Choose a level, well-drained site, preferably near your garden.

Step 2



There are numerous styles of compost bins available depending on your needs. These may be as simple as a moveable bin formed by wire mesh or a more substantial structure consisting of several compartments. There are many commercially available bins. While a bin will help contain the pile, it is not absolutely necessary. You can build your pile directly on the ground. To help with aeration, you may want to place some woody material on the ground where you will build your pile.

Step 3



To build your pile, either use alternating layers of high-carbon and high-nitrogen material or mix the two together and then heap into a pile. If you alternate layers, make each layer 2 to 4 inches thick. Some composters find that mixing the two together is more effective than layering. Use approximately equal amounts of each. If you are low on high-nitrogen material, you can add a small amount of commercial fertilizer containing nitrogen. Adding a few shovels of soil will also help get the pile off to a good start; soil adds commonly found decomposing organisms.

Step 6



The pile will heat up and then begin to cool. Start turning when the pile's internal temperature peaks at about 130 to 140 degrees Fahrenheit. You can track this with a compost thermometer, or reach into the pile to determine if it is uncomfortably hot to the touch.

Step 5



Punch holes in the sides of the pile for aeration.

Step 4



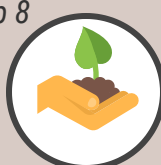
Water periodically. The pile should be moist but not saturated. If conditions are too wet, anaerobic microorganisms (those that can live without oxygen) will continue the process. These are not as effective or as desirable as the aerobic organisms. Bad odors are also more likely if the pile is saturated.

Step 7



During the composting season, check your bin regularly to assure optimum moisture and aeration are present in the material being composted.

Step 8



Move materials from the center to the outside and vice versa. Turn every day or two and you should get compost in less than 4 weeks. Turning every other week will make compost in 1 to 3 months. Finished compost will smell sweet and be cool and crumbly to the touch.



Common Problems

The compost pile has a bad smell.

A bad smell may also indicate too much nitrogen. The compost may be compressed and should be turned to provide more oxygen. Also, add some relatively chunky materials such as twigs or wood chips to provide air spaces. If the material is so wet you can easily squeeze water out of it, mix in some dry brown materials and soil.

Shred any clumps that have formed. If the compost smells of ammonia, you have too many green materials and need to add more brown materials and possibly some soil.



Composting is not an exact science. Experience will tell you what works best for you.



The compost is too wet.

Remember that compost should be about as moist as a sponge that has been wrung out. Squeezing a handful shouldn't produce more than a few drops of moisture, but it should stay together as a ball. Many growers use a tarp over the compost to keep it from drying out too rapidly in the warmth of the sun. If you do add water to a dry compost pile, don't just add it to the top of the pile because it likely won't be absorbed. Rather, pull the pile apart and relayer it, adding water as you go.

The compost doesn't have a bad smell and it is damp, but it won't heat up.

Chances are you don't have enough green materials in the compost pile, so it is lacking nitrogen. Mix in more green materials. Adding fresh grass clippings, leafy plant clippings, chicken droppings, aged manure will increase the nitrogen in your compost. Cold composting often proceeds faster in warmer climates than in cooler areas. Cold piles may take a year or more to decompose depending on the materials in the pile and the conditions. Adding kitchen wastes to compost may attract flies and insects. To prevent this problem, make a hole in the center of your pile and bury the waste.



The compost is damp and warm, but only in the middle.

The pile isn't large enough to generate much heat. Gather more green and brown materials and mix them with the old ingredients. If you notice that nothing is happening, you may need to add more nitrogen, water, or air. If things are too hot, you probably have too much nitrogen. Add more carbon materials to reduce the heating.



Aeration: Let Your Compost Breathe



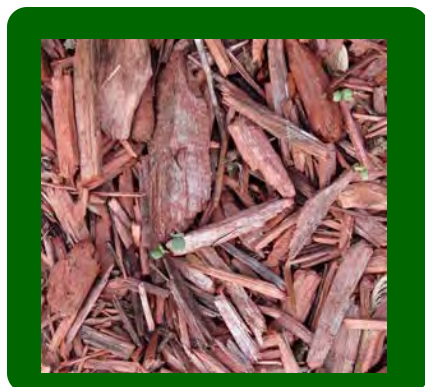
Turn it.

The traditional way to aerate a compost pile is to simply turn it, using a pitchfork or other implement to essentially turn the pile inside out. Turning often is done when the temperature on the inside of the pile starts to cool or if the pile begins to smell. Both are signs that the aerobic microbes in the center of the pile may be running out of air. Turning the compost on a regular basis can keep the pile percolating.



"Fluffing."

Turning compost also keeps materials from settling, which can compact the pile and make it much more difficult to keep moist and aerated. In fact, some people call turning a compost pile "fluffing." That's a gentle-sounding word for moving around what could easily be hundreds of pounds of compost materials in a 3-cubic-foot container.

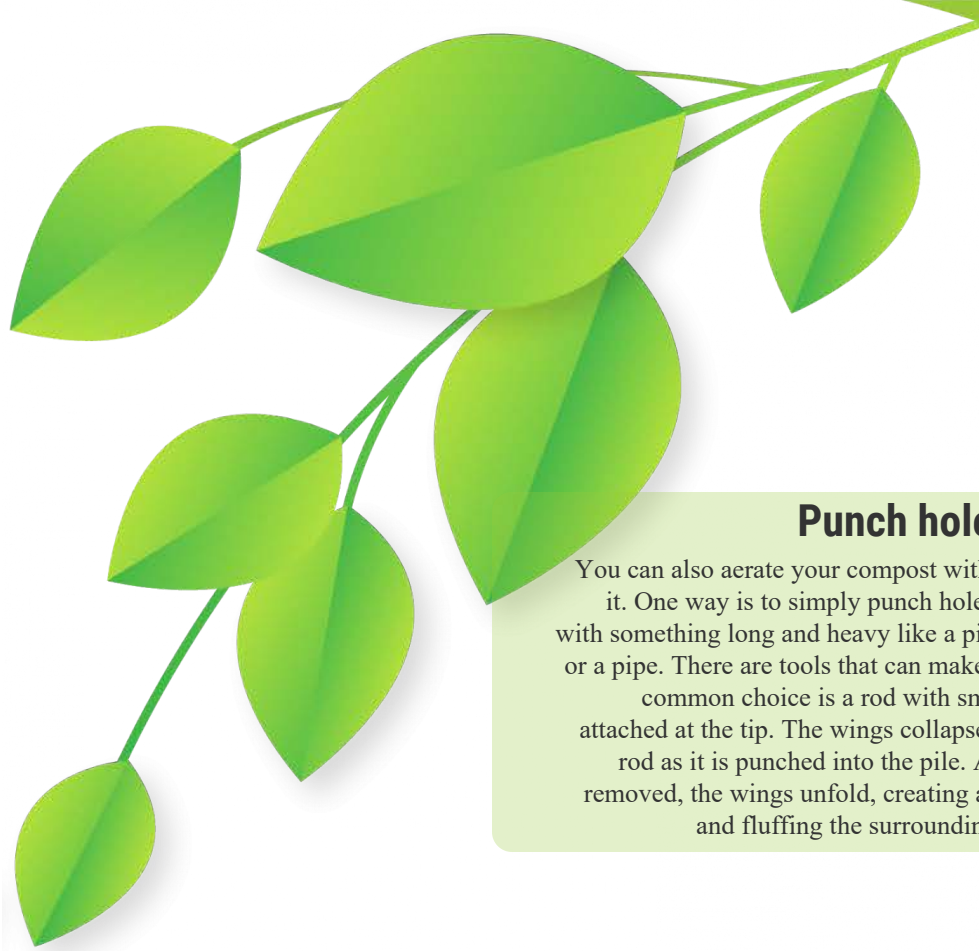


Create air pockets.

It's also a good idea to use sticks, wood chips, and other relatively porous materials as the bottom layer of the compost pile to make air pockets. You can also add such materials as you build the pile to create more air pockets. Paper egg cartons and the paper rolls from inside paper towels, wrapping paper, and toilet paper are other good options.

Regardless of whether you've opted for hot composting or cold composting, making sure your pile is getting plenty of air throughout will keep fast-acting aerobic microorganisms healthy and generating compost.





Punch holes in it.

You can also aerate your compost without turning it. One way is to simply punch holes in the pile with something long and heavy like a piece of rebar or a pipe. There are tools that can make it easier. A common choice is a rod with small “wings” attached at the tip. The wings collapse against the rod as it is punched into the pile. As the rod is removed, the wings unfold, creating a larger hole and fluffing the surrounding materials.



Check on any local or state regulations for composting in urban areas—some communities may require rodent-proof bins.



Set up bins.

Some people make the task of turning their compost easier by setting up a series of three or more bins. As compost needs to be turned in the first bin, it’s moved to the next, which aerates the compost. More composting materials are added to the first bin. The process continues until the compost at the bottom of the last bin is ready to be used.



Aeriation pipes.

Many composters also use porous aeration “pipes” to provide air without turning the pile. Some are as simple as a bound bundle of corn stalks or roll of wire mesh. Small PVC pipes—no wider than 2 inches to prevent too much heat from escaping—with half-inch holes drilled every few inches are becoming a popular choice. Whatever kind of aeration pipe you use, it’s possible to either build the compost pile around the pipes or dig a hole and insert them.



Vermicomposting

Vermicomposting uses worms to compost. This takes up very little space and can be done year-round in a basement or garage. It is an excellent way to dispose of kitchen wastes.



Steps for Vermicomposting:



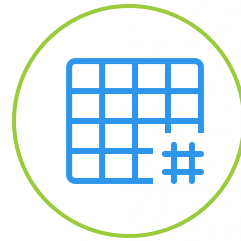
1

You need a plastic storage bin. One 1' x 2' x 3.5' will be enough to meet needs of a family of 6.



2

Drill 8 to 10 holes, approximately 1/4" in diameter, in the bottom of the bin for drainage.



3

Line the bottom of the bin with fine nylon mesh to keep the worms from escaping.



4

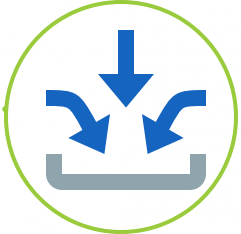
Add worms to your bin. Redworms are recommended for best composting, but other species can be used.

Redworms are the common small worms found in most gardens and lawns. You can collect them from under a pile of mulch or order them from a garden catalog.



5

Shredded newspaper works well as bedding. Rip into pieces and water well so that it is thoroughly moist. Place on one side of your bin. Do not let it dry out.



4

Put a tray underneath to catch the drainage.

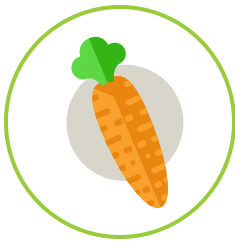
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Worms Digest Half of Their Body Weight on Average Each Day

Worms are fast food processors, and can digest about half of their body weight each day. The average food waste from a family of 4 would need about 20,000 worms to process each day.



Vermicomposting, continued



7 Provide worms with food wastes such as vegetable peelings. Do not add fat or meat products. Limit feed—too much at once may cause the material to rot.



8 Keep the bin in a dark location away from extreme temperatures.



9 In about 3 months the worms should have changed the bedding and food wastes into compost. At this time add fresh bedding and more food to the other side of the bin. The worms should migrate to the new food supply.



10 After a couple of weeks, open your bin in a bright light. The worms will burrow into the bedding. Scoop out the finished compost and apply to your plants or save for use in the spring.



Using Compost

Compost can be used for all your planting needs. Compost is an excellent source of organic matter to add to your garden or potted plants. It helps improve soil structure which contributes to good aeration and moisture-holding capacity.

Compost is a source of plant nutrients. Compost can also be used as a mulch material. Studies have shown that compost used as a mulch, or mixed with the top one-inch layer of soil, can help prevent some plant diseases, including some of those that cause damping of seedlings.



On the Farm

On the farm, potential waste is turned into a resource that saves money and helps the environment. Producers use livestock manure to fertilize crops. When manure is properly handled, it can be safely applied to the land without the risk of polluting water. Composting is also practiced in some poultry operations. The compost is used as fertilizer on the farms and for lawns and gardens.

Typically, a small farm will require up to 10 tons of compost per acre—or however much it takes to spread about an inch over the ground being planted.

It is a good practice to have your soil tested annually if you use compost in successive years. This will let you know if the compost is adding too much phosphorous to your soil.



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texasNRCSinfo@usda.gov



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