



## Backyard Composting

Composting is a process that converts food scraps and yard waste such as leaves and grass clippings into useful, nutrient-rich soil. Composting is one of the easiest things that individuals and families can do to help manage the amount of waste they produce.

Most people think of compost when they are working in the yard, but your kitchen is also a great source for compostable materials. If you look into the garbage can of the typical Minnesota household, about one quarter of their household trash is made up of “organic” material—things that came from plants and animals, like food scraps and non-recyclable paper such as paper plates and paper towels. That’s a lot of good compost destined for landfills or incinerators. Mixing food scraps with leaves and lawn clippings in a compost pile reduces your waste and transforms these materials into a valuable, nutrient-rich soil amendment right in your backyard. You can improve your soil by adding the finished compost to potting soil, gardens, or lawns as a natural alternative to fertilizer.

### What are you doing with your food scraps?

People typically deal with their food scraps and yard waste in several ways. Because it is against the law in Minnesota to throw yard waste in the garbage, you and your neighbors likely spend several hours together on fall days bagging your leaves for special pickups or transporting your grass clippings to an appropriate compost site. These materials are composted, but it’s awfully inconvenient for you. Composting your leaves and grass in the backyard can be a lot less work and it will save you the costs of bags, pickup fees, and time.


As for food scraps, people most commonly use their handy garbage disposals or throw it into the garbage without a second thought. But both of these options have environmental disadvantages. While it seems that food ground up in the garbage disposal goes away, it actually goes down the pipe with wastewater to city and regional water treatment plants. At these facilities, the food waste must be separated and then disposed of in landfills or incinerated. The road is longer but it ends up in the same place as your trash.

When food scraps are thrown into the garbage, they have to be picked up, transported, and buried or burned at significant financial and environmental costs. A trip to the garbage is also the end of the line for your food scraps as a usable resource. When food scraps decompose in a landfill, they break down and create methane, a greenhouse gas that is 23 times more powerful than carbon dioxide. In addition, as the food scraps decompose and ooze through the surrounding trash, they pick up other toxins and create highly toxic sludge—called leachate—that needs to be contained and treated. In incinerators, the material is burned, never to be used again, and is reduced to toxic ash. Also, because the material is wet, it lowers the BTUs generated at the incinerator.

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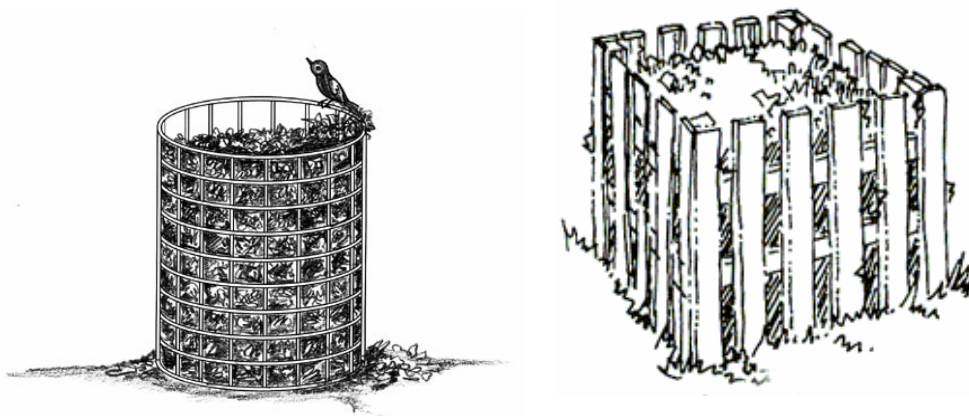
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## Getting Started

Backyard composting is done outside, and can be as simple as a small pile of leaves in a corner of a yard to a more complex system of two-to-three bins containing yard waste and food scraps at various stages in the composting process.

## Selecting a Compost Bin

A variety of containers are suitable for compost bins. Pick a bin that suits your tastes, yard size, and gardening habits. Bins can be as simple as a length of chicken wire around stakes or as complicated as an intricately designed concrete or wood structure. There are plans available for constructing bins and many commercial bins available for purchase. To encourage waste reduction through composting, many local governments, including the counties in the Twin Cities area, have offered compost bins for purchase at a reduced rate. To build your own, simply see what you have stored in your own garage: wire fencing, cement blocks or bricks, 55-gallon drums, picket fencing, recycled wooden pallets are all common bin building materials. For detailed descriptions and pictures of advanced bin designs, request Eureka Recycling's fact sheet "**Structures for Backyard Composting**" or consult *The Rodale Book of Composting: Easy Methods for Every Gardener* by Debra Martin (Editor). To buy a bin, visit your local garden store or contact Eureka Recycling for information about bins available through the counties.



## Size Matters

Compost will happen no matter the bin you choose. However, the dimensions of your compost bin will affect how quickly your pile will decompose. If you want to create compost quickly, rapid heating and maintenance of processing temperatures are critically important to drive the composting process. A typical compost pile is five feet by five feet by five feet. The length is not as important but a pile higher than five or six feet may not get enough air to the center and can be difficult to turn.

With Minnesota's cold winter, the size of your compost bin is an important consideration. Maintaining adequate heat during winter is the key to using your fall leaves as finished compost in the spring. Smaller compost bins (three to four feet across) lose heat during winter, which allows the pile to freeze and stops bacterial activity. This significantly lengthens the processing time. Larger bins can self-insulate to maintain processing temperatures throughout the winter. Smaller compost bins (three to four feet across) lose heat in winter, stopping bacterial activity, which allows the pile to freeze. The compost will be slow to warm in the spring. This significantly lengthens the processing time, but, over time, your food scraps and yard waste will compost.

## Location, Location, Location

Locate your compost pile in an area of your yard that will not interfere with activities or offend neighbors. The pile will work best in a location that receives partial sunlight but is somewhat protected from drying winds. It should also be near a water source, because you will need to water it occasionally.

## **It's Your Turn (Compost Maintenance)**

An active compost pile will reach temperatures of between 130° and 160° Fahrenheit. As the center cools, turn the pile once or twice a month to improve aeration, help decomposition, and minimize any objectionable odors. In cold climates like ours, do not turn compost piles in the fall or winter. The loss of heat will cool the pile, halting decomposition during the winter. Compost piles that do cool off during the winter may need to be turned in the spring to speed heating and encourage bacterial activity. The insulating outer layer of an unturned compost pile will be slower to decompose, but can be remixed with fresh greens in a summer compost bin. If you choose not to turn the pile, it will take longer to decompose, but it will do so eventually.

Rain may provide enough moisture for your pile, but in dry seasons (or if your pile is sheltered from the rain) continue to water it periodically to keep it moist. You can add a little new material when you turn the pile, but generally, start a new pile after accumulating enough material.

A well-managed compost pile will be ready in two to four months in the warm season, whereas an untended pile will take a year or more to decompose. When completed, your compost pile will be about half its original height and will have a pleasant, earthy smell.

## **Compost Materials**

The microorganisms responsible for decomposition need oxygen, water, and nitrogen. Small pieces of food scraps and plant material pieces will break down more rapidly. You may use a shredder or lawn mower to chop up leaves and small twigs before adding them to the pile if you would like speedier decomposition. If particle size is too small, the pile may become compacted, have less oxygen, and decompose more slowly.

Many home and yard materials can be composted: leaves, grasses, non-woody shrub trimmings or twigs less than 1/4 inch in diameter, faded flowers, weeds, plants remaining at the end of the gardening season, straw, coffee grounds, eggshells, fruit and vegetable scraps, shredded newspaper, small amounts of wood ash, and sawdust can all be added to your backyard bin. (If you add sawdust, which is carbon-rich, be sure to add some extra nitrogen (see compost recipes below) in order to keep the carbon/nitrogen ratio in balance.)

There should be little need to compost grass, since clippings may be left safely on the lawn if you mow regularly and remove only 1/3 of the blade length each time. If you do compost grass, mix it with other yard waste. Grass clippings alone pack down and restrict airflow, which limits the availability of oxygen that is needed for decomposition.

Some things should NOT be composted in your backyard. Pet and human feces can transmit diseases. Meat, bones, grease, whole eggs, and dairy products attract rodents and other animals. Badly diseased or insect-infested plants and weeds that are loaded with seeds may not heat up enough to be rendered harmless. If you have a very hot pile, though, it should kill most diseases and seeds.

## **Compost Recipes**

Many compost experts will discuss at length the carbon to nitrogen ratio in a compost pile and the way to optimize the ratio for speedy decomposition. Do not be intimidated by the chemistry of this discussion. All you need to remember is that a good pile will have greens (nitrogen source: grass clippings, plant trimmings, food scraps) and browns (carbon source: dried leaves, stalks, straw), but even a pile with mostly browns or mostly greens will eventually break down.

## **Putting the End Product to Use**

Gardeners have used compost for centuries to improve the physical condition of soil and to add some of the nutrients needed for plant growth. Compost is a natural alternative to fertilizer. Finished compost from

a backyard pile can be mixed with potting soil for planting or repotting plants. It can be used as a top-dressing for house and garden plants, as mulch around the base of plants, or sprinkled in the bottom of a seed row before planting. Incorporating compost into light, sandy soil helps it hold both moisture and nutrients, while adding it to heavy clay soil improves drainage.

## **Composting and the Law**

Backyard composting is allowed by ordinance in residential areas of many cities and suburbs. Before starting your own backyard compost pile, it does not hurt to check with your city or county to find out about any local requirements for compost piles. For example, an ordinance was adopted in Saint Paul in 1999 to allow residential backyard compost piles. While the ordinance may seem very detailed, its requirements are basic good advice for a healthy compost pile. The ordinance specifies the size of the pile based upon lot size, container location (at least five feet from lot lines and no closer than 20 feet to any habitable building other than the resident's own home, and no less than two feet from an alley). It specifies that the container be made of a durable material such as wood, block, plastic, or sturdy metal fencing. The ordinance allows only organic yard materials (grass clipping, leaves, faded flowers, weeds, sawdust, wood ash and plant trimmings, lake plants, and straw) and kitchen scraps such as fruit and vegetable peels and trimming, and other raw, non-greasy food wastes, as well as commercially available compost materials. It does not allow meat, bones, fat oils, dairy products, other greasy kitchen wastes, whole branches or logs, plastics and synthetic fibers, pet or human waste, or heavily diseased plants.

## **Collecting Food Scraps and Yard Waste at the Curb**

Because your food scraps are so valuable, communities across the nation are now looking at this material as the next frontier in waste reduction. Cities like San Francisco, CA; Toronto, ON and many cities in Minnesota, like Hutchinson, Wayzata, Burnsville, and Minnetonka, are collecting food scraps and other compostable materials at the curb, just like recycling. In these programs, the materials are delivered to a commercial compost facility. These facilities can manage the material at high temperatures for a sustained period of time, allowing them to accept anything "organic," including many items that cannot be composted in your backyard such as meat, dairy products, and paper that cannot be recycled, like napkins, pizza boxes, and egg cartons.

In 2001, Eureka Recycling tested the collection of food scraps and nonrecyclable food paper in over 400 Saint Paul households. The households in the study reduced their waste by an average total of 74 percent! Because of this success, residents were enthusiastic about the opportunity to have these materials collected for composting and the City of Saint Paul embraced the goal of adding household food scraps and non-recyclable food paper to their curbside collection service. Eureka Recycling and the City are currently working on plans for a citywide composting program.

Whether or not food scraps and yard waste collection is available in your community, you can always use a compost bin to reduce your waste and give your household food scraps and yard waste a new life as compost—right in your own backyard.

## **For Information and Further Reading**

There are numerous books about composting available at your local library and local bookstore. We've listed a few here that we like. (Some of the older versions may only be available at a used bookstore.)

- *Easy Composters You Can Build*; Nick Noyes
- *Let it Rot: The Gardener's Guide to Composting*; Stu Campbell
- *The Rodale Book of Composting: Easy Methods for Every Gardener*; Debra Martin (Editor)

## Backyard Composting Trouble-Shooting Chart


Backyard composting can be as easy as making a pile and waiting for it to turn into soil. However, if you are concerned about odor or getting the most out of your compost bin, here are a few tips for beginners.

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Symptoms	Possible Causes	Solutions
Unpleasant odor from pile.	Not enough oxygen due to compaction.	Aerate by turning/mixing, or insert hollow pipe or tubing into pile, allowing gas exchange.
	Not enough oxygen due to over-watering.	Add carbon materials such as cornstalks, leaves, or wood chips to soak up excess water. Also improve aeration.
	If odor of ammonia, too much nitrogen.	Add carbon materials and aerate.
Pile not heating up.	Lack of nitrogen.	Mix in a nitrogen source such as fresh grass clippings, fresh manure, or blood meal. If you cannot mix the materials easily, try making holes in the pile and pouring in the nitrogen materials.
	Not enough moisture.	Stick a garden hose down into the pile in several locations and water or poke holes into the pile with a rod and pour water down the holes using a watering can.
	Pile needs to be turned.	Use a pitchfork to bring materials from the outside of the pile into the center.
	Compost may be finished. If it looks dark and crumbly and smells earthy instead of moldy or rotten, it is probably ready.	Remove finished compost from bin and begin adding new material to bin.
Compost is damp and warm only in the center.	Pile is too small.	Gather more materials and build a larger pile. It should be at least one cubic yard, but no wider or higher than six feet.

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