



## **Making Compost for the Garden**

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Production of a good flower garden or vegetable garden depends on a fertile, well-drained soil. All too often, garden soils are poorly drained because of their less-than-optimum physical condition. One way to improve garden soil structure and fertility is by adding organic matter to the soil in the form of compost or manure. For the home gardener, using manure can be expensive. Furthermore, manure is often unavailable to urban dwellers. A compost pile, on the other hand, is easily constructed and will provide the efficient gardener with both a good supply of “artificial manure” and a disposal site for garden waste.

Annual additions of compost and other organic materials to soil provide benefits that may not be immediately apparent. Such additions will improve the soil over a period of time, however. As the partially decayed organic matter continues to decompose, fine soil particles collect together into larger, crumb-like masses. These larger particles do not pack as closely as did their smaller component parts; the result is improved aeration and drainage. This process is especially critical in heavy clay soils that contain a larger percentage of very small soil particles. In sandy soils, which are made up of relatively large particles, the addition of compost increases moisture and nutrient retention.

As compost decomposes in the soil, it also releases plant nutrients. Compost is not, however, a substitute for fertilizer. It will not supply all the nutrients required for optimum plant growth. For maximum flower and vegetable yields, nutrients such as nitrogen (N), phosphorus (P), and potassium (K) are usually applied in the garden in a concentrated form such as 13-13-13 fertilizer. With careful attention to the decomposition of organic additions to garden soil (such as cottonseed meal, blood meal, wood ashes, and manure), gardeners can also achieve good production results without use of commercial inorganic fertilizers. Keep in mind, though, that compost alone will not usually supply adequate nutrition. However, annual applications of generous amounts of compost and 4 bushels of manure per 100 square feet will usually produce adequate yields in the garden.

### **HOW COMPOST IS MADE**

During the composting process, raw plant material is converted into compost through the action of microorganisms. As the material gradually decomposes, the center of the pile reaches temperatures of 150° to 170°F or more. This kills some of the weed seeds, insect eggs, and disease organisms that are present in the raw material. The finished compost is soft, loose, and smells somewhat like freshly plowed soil.

In most cases, a compost pile is contained in some type of enclosure, although it can be made without one. There are commercially available compost bins made of slatted metal, plastic, or plasticized wire mesh. Perforated trash cans may also serve the purpose. Simple compost containers can be constructed of galvanized wire fencing, boards, bricks, or cement blocks. The key is to have enough openings to allow adequate air movement.

The compost pile should be at least one cubic yard, which is three feet wide by three feet across by three feet high. If a pile is much larger, the air that is necessary for decomposition will not get into the center of the pile. A compost pile that lacks air will emit an odor similar to that of rotting garbage, but a pile that is properly constructed should be free of offensive odors.

*The ingredients.* Most of the ingredients for the compost pile are raw materials from the garden: grass clippings, sod, leaves, cornstalks, hedge clippings, weeds, and discarded plants. Kitchen scraps such as fruit and vegetable trimmings can also be added to the pile. Do not include grease, fat, meat, or bones because they attract rodents. Likewise, unshredded twigs and branches of trees or shrubs should not be added to a compost pile because they take too long to decompose.

*Making the pile.* The compost pile should be constructed in layers. Alternate moist and green materials like grass clippings or kitchen wastes with dry materials such as leaves or cornstalks. A pile built primarily of dry materials will decompose very slowly because it lacks nitrogen and water. Compost that is made primarily of fresh, green materials will decompose rapidly but will shrink as water is lost, leaving only a small volume of compost. Therefore, combining equal proportions of dry and moist material is suggested, although a 2:1 ratio of dry to moist is acceptable. If the organic materials are dry, water should be added to promote the decomposition process.

Chopping the materials into smaller pieces is not necessary, but doing so will greatly increase the rate of decomposition because the microorganisms have more surface area to work on. This is especially true for coarse, dry ingredients. Grasses are usually chopped up by the lawn mower, but more fibrous materials can be put through a chopper-shredder if desired.

Another method of constructing a compost pile, perhaps the one most commonly used, is to alternate layers of plant material and garden soil. Start by placing a 6- to 8- inch layer of organic matter inside the enclosure. The microbes needed for decomposition of organic matter are already present. However, the addition of one inch of garden soil will speed the composting process. Continue building the compost pile with alternate layers of soil and organic matter, using the materials you have already, or adding them a layer at a time as they accumulate throughout the growing season.

*pH, fertilizer, and moisture.* The organisms that break down the organic matter also require large amounts of nitrogen for rapid and thorough decomposition of the plant material. Therefore, one pound of a complete fertilizer (such as 10-10-10) or 1/3 pound of ammonium nitrate (33-0-0) should be added to the pile for each cubic yard of compost. Cottonseed meal

or dried blood may be used instead of concentrated fertilizer, but this will result in somewhat slower activity. To hasten the composting process, keep the pile moist but not soggy-wet. Inadequate moisture will reduce microbial activity. Excess moisture may cause undesirable decomposition and unpleasant odors. One way to get moisture into the pile is to make a depression in the top of the pile that will collect rain. The pile should be moistened occasionally with a garden hose during dry periods. As the plant materials decompose, the pH of the pile is lowered; however, as the process continues, the pH eventually rises to approximately 7.0.

*Turning the pile.* A pile that is built in layers, as described above, should be turned for the first time about four weeks after its construction. Turning the pile aids in mixing the materials and is necessary for maintaining the oxygen supply required for aerobic decomposition. During the warm months, the pile should be turned about once a month. In cooler weather, decomposition is slower and during the winter very little decomposition occurs. Most gardeners find it difficult to obtain all the materials for a compost pile at one time. Therefore, many compost piles are built up one layer at a time as materials become available through the season. Such a pile should be turned to mix in new material whenever it is added. Locating two or three compost bins side by side can make the turning process easier and simpler – just shift the material from one bin to the other. Problems will develop if the pile is not working properly. These problems include odor, slow decomposition, a dry pile, or standing water. The solution to the problem depends on its cause. In general, turning the pile, adding water, maintaining a mixture of dry and moist materials, or adding nitrogen will solve the problem.

## **USES FOR COMPOST**

The compost should be ready to use within three to four months. It is ready to use when it is dark and crumbly and the ingredients have lost much of their original identity. Finished compost should have an earthy, pleasant smell. If you want the finest product, screen it through a 1/2-inch screen. Once it is ready, you can use the compost as a surface mulch on plant beds. Apply it two to four inches deep around vegetable and flower plants to control weeds, conserve moisture, and prevent soil crusting. As a soil conditioner, compost can be mixed into the soil just before planting. Add it at the rate of two to four bushels per 100 square feet. Compost can be used as a substitute for peat moss to amend soil in potting mixes, seed flats, or when transplanting trees and shrubs.