

Making Compost

A Beginner's Guide

Compost is decayed organic matter that is dark and crumbly and has a pleasant earthy odor. It is used to improve garden and potting soil. Properly prepared compost is rich in nutrients and is free of weed seeds and offensive odors.

Compost is produced in piles or pits from organic waste such as leaves, grass clippings, manures, straw, hay and garden refuse. It can be applied as a thin top dressing for lawns, as mulch around shrubs and young trees, or mixed into the soil in vegetable and flower gardens. One of the greatest benefits of making compost is recycling garden and yard waste into a useful product and reducing the amount of solid waste in the landfill to help improve the environment. Families can share a compost pile or contribute to a neighborhood composting facility. Composting small prunings and twigs and encouraging municipalities to shred large prunings and downed limbs allows for reuse of damaged or overgrown plants in the landscape.

Chemistry of Compost

The process of converting organic wastes to rich humus involves several types of bacteria and fungi. These organisms begin the process by breaking down cellulose and other complex molecules in the residue. Populations increase rapidly and the temperature

inside the pile may reach 150 to 160° F, killing weed seeds and disease organisms. After several months, the temperature decreases and fungi disappear. Millions of bacteria continue the gradual breakdown of organic materials into rich, dark, crumbly humus.

Getting Started

The compost heap should be located in an area that is not prone to standing water. Many gardeners choose an out-of-the-way, accessible location near the garden or refuse disposal site for convenience. It helps to have a water source nearby because compost piles need to be kept moist.

Compost can be made in a pit or with another method that does not require digging. Although it is possible to accumulate composting materials in a loose pile, an enclosure of some type is desirable. The following materials are suggested:

Woven wire or wood slat fence – Almost any type of wire, from fencing wire to reinforcing wire, can be

used (Figure 1). Heavy gauge wire is preferred but finer wire can be used if supported by posts or rods.

Cement blocks or bricks – Blocks should be heavy enough to hold the pile in place without mortar.

Scrap lumber (Figure 2) – Do not use good lumber because damp compost may ruin the boards. For a more permanent enclosure, use either redwood or cypress. Old pallets are often available for free. Strap four of them together to make a compost bin.

The size of the compost pile varies depending on availability of organic materials and how much compost is needed. Rectangular or square shapes are slightly easier to work with, but round wire enclosures will have less surface area and do not dry out as quickly. A pile 5 feet wide by 5 feet long or a circular pile about 5 feet in diameter is sufficient for most households. The height of the pile fluctuates as organic material is added. Divide the pile or bin into two parts, or use two bins of the same size. Use one of the bins for last year's compost and accumulate this year's waste in the other one.

The types of plant materials that can be added to the compost pile include leaves, grass clippings, weeds or garden refuse, fine hedge clippings, straw, corncobs, sawdust, old hay, and mulch removed from flower or vegetable gardens. Do not add plants that are severely diseased. Wood ashes should be avoided unless your soil is acidic, as they raise the pH. Most Kansas soils are alkaline, and adding wood ashes to the compost pile usually makes a bad situation worse.

Kitchen scraps such as egg shells, peelings, or plant residues can be added as long as the pile is kept covered to keep it from drawing flies. Avoid meat scraps or bones, which may attract dogs and other animals.

Making the Compost Pile

Making compost from organic materials as they become available is a very slow process. The process can be accelerated by making hot compost. Start with a 6- to 8-inch layer of “brown” materials such as straw, old mulch, or tree leaves. Add a 2- to 3-inch layer of “green” materials such as grass clippings, coffee grounds, weeds, kitchen waste, or freshly harvested plant material. Alternate brown and green layers until the pile is 3 to 5 feet high. If green materials are in short supply, add a small amount of commercial garden fertilizer (about 1 to 2 cups per square yard) or an inch or two of manure. The fertilizer or manure provides nutrients that allow microorganisms to build up in the compost pile to ensure decomposition. Water after each layer. Brown materials can be difficult to find at certain times of the year. Stockpile leaves bagged in the fall and add them to the compost pile as needed.

The top of the compost pile should be dish-shaped, so it is slightly lower in the center than on the sides. This allows rainfall to soak into the pile instead of running off. In dry conditions, the pile should be soaked weekly so it stays moist. The compost pile eventually will reach 150 to 160° F before it begins to cool down. When this happens, it is time to turn the pile. Slice through the layers and turn the materials upside down. Move materials from the outside of the pile to the inside. After mixing, form the dish at the top and water. Let the pile heat up and cool down as before.

Compost should be ready four to six months after the pile is started. Most gardeners keep two piles or divide the pile into two sections, using one side to

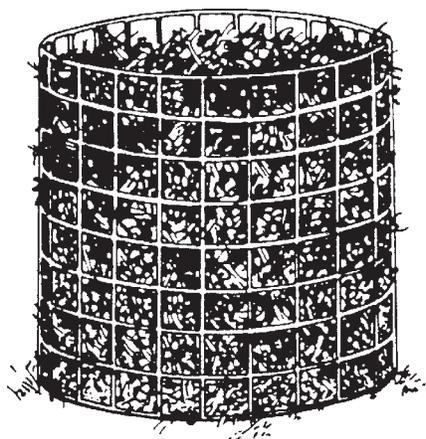


Figure 1. Woven wire compost bin.

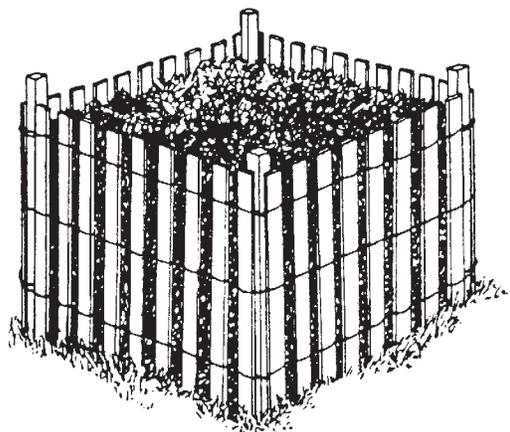


Figure 2. Bin made from snow fence.

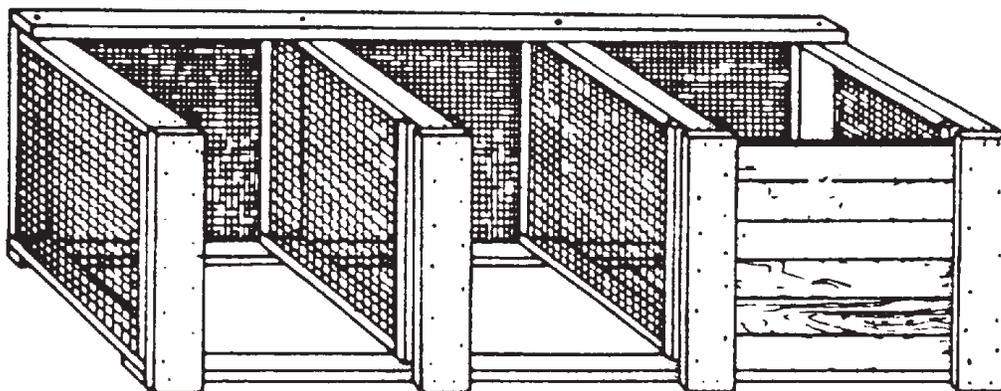


Figure 3. Wood and wire three-bin turning unit.

accumulate new material and storing last year's compost in the other (Figure 3).

As the compost pile progresses, check for signs the process is going well. The pile should shrink or sink in two to three weeks. If not, loosen it with a shovel or fork to aerate, adding moisture if compost is dry. A strong ammonia smell or other offensive odors may indicate overwatering or an imbalance in materials. Ammonia odors can occur when composting a lot of fresh, green plant material, especially grass clippings.

After four to five weeks the inside of the pile should be hot. This happens in less than a week using the quick composting procedures described in the following section. Push a wire or stick deep into the pile, pulling it out and touching it to check temperature. In three to four months, the pile should be about half its original height. Compost will be dark, moist, and crumbly and should smell like moldy leaves with a rich, earthy odor.

Quick Composting

The composting process can be accelerated by using quick composting methods. These involve finely shredding materials, mixing with soil and fertilizer, and moistening before placing them in an enclosed bag or bin. Quick composting requires slightly more effort, but compost is ready in a month and quality is comparable to compost ready in four to six months.

Organic material should be run through a soil shredder, compost grinder, or coarse hammermill. These may be too costly for most gardeners, but the serious gardener may find them useful. Those who do not own one of these tools can use a rotary lawn mower to pulverize or shred leaves and plant stems,

collecting the materials in a lawnmower bag. If using a discharge mower, blow shredded materials into a central pile by turning the mower in a circle. Add and mix shredded organic materials, soil, and fertilizer or manure in proportions similar to those for slow composting. It is not necessary to turn the pile. Compost should be ready in two to three weeks in warm weather or five to six weeks in cooler weather. Compost can be stored if not needed immediately.

Several bins available commercially are packaged with quick composting instructions. Plastic bags, garbage cans, or a standard enclosure lined in sheet plastic can be used for this purpose. The container or bin must be at least three feet in diameter or compost will not heat well, slowing down the composting process.

Grass Clippings

Bagged grass clippings make excellent composting material, but research shows it may be more beneficial to leave them on the lawn. If grass clippings are added to the compost pile make sure lawn was not treated with a crabgrass killer. Most crabgrass control products contain the active ingredient quinclorac. This can harm broadleaf plants, including vegetables, for up to 18 to 24 months after applying a compost made with treated grass clippings. Crabgrass preventers, on the other hand, should not harm plants after they have gone through the composting process.

Using Compost

Many gardeners make compost without understanding how to use it around the home. Compost has a number of horticultural applications, which are described on the next page.

Fertilization and soil improvement. Organic materials can be added to improve soil looseness and workability. Heavy, tight clay soils benefit from the loosening effects of composted organic materials. In sandy soils, organic material acts as a sponge to hold water and nutrients.

Compost contains nutrients plants require. The amount of specific nutrients depends on the types of materials composted and how much water the pile contains. The suggested application rate is 50 to 100 pounds per 100 square feet, which is about ¼ inch of material spread over the entire garden. The best time to apply compost is just before tillage in either the spring or fall to incorporate the compost throughout the root zone. In Kansas, garden soils are often tilled in the fall. Compost made early in the season should be ready by then, or use last year's compost if you have a two-pile system.

Compost at planting. Apply a band of compost in the bottom of a row trench or add several shovels full to the bottom of planting holes. Tomato plants, perennial flowers, trees, and shrubs benefit from the slow release of nutrients through the early growth period. Compost can be applied as a top dressing for seeded vegetables and flowers to prevent soil crusting. It can be used as a substitute for soluble fertilizer or starter solution when mixed in equal parts with water. Leftover compost can be added to garden soil later.

Potting mix for seedlings. Compost that has been screened for large particles can be mixed with soil or sand in approximately equal parts, and then used as a growing medium. To ensure healthy seedlings, compost should be well deteriorated and free of harmful disease organisms and insects.

Using compost on a lawn. The best way to use compost is to apply it liberally before planting. Fertilize by adding a thin layer of top dressing every year.

Cautions in Using Compost

Compost is not a cure-all for garden soils or problems. While benefits certainly outweigh limitations, it is possible to overdo compost applications. If applied excessively, some composts can provide too much of a nutrient, resulting in lush, rapid growth at the expense of fruit production. Compost that has not broken down completely may continue the decomposition process. When added to soil in large amounts, this unfinished compost can remove or tie up soil nutrients until decomposition slows. This is of particular concern when compost is applied in spring and incorporated into the soil.

Compost creates a dark, cool environment at the soil surface, providing favorable conditions for sowbugs, squash bugs, and other insects. Your local K-State Research and Extension agent can advise you on specific control measures. Some compost packs into a dense layer that is almost impervious to water when applied to the soil surface. This is an indication of a poorly made compost. Use more soil with compost or mix compost with soil before use to correct this situation.

Additional References

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Ward Upham, Horticulturist

Revised from original by Charles Marr, Horticulturist, Vegetable Crops

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