

# Backyard Composting

**T**wenty percent of the 2.6 million tons of solid waste produced annually in Alabama is composed of lawn and garden wastes such as grass clippings, shrubbery trimmings, leaves, tree prunings, home garden refuse, and kitchen wastes. The quantity of these wastes is exceeded only by paper and paperboard waste products.

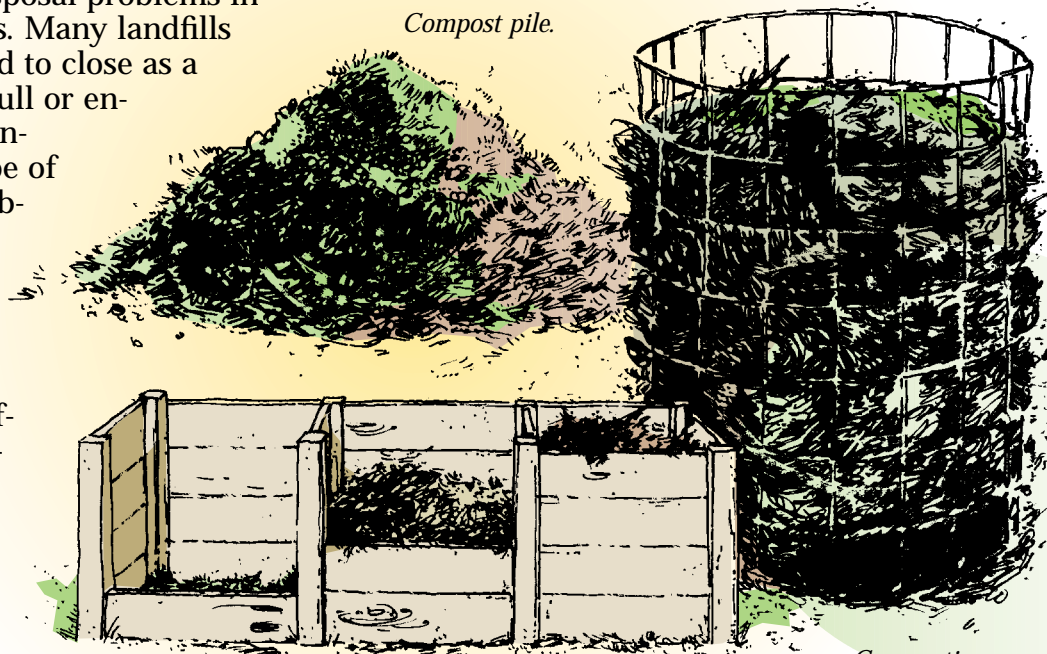
The magnitude of solid waste production is presenting disposal problems in sanitary landfills. Many landfills have been forced to close as a result of being full or environmentally unsound. The scope of the disposal problem could be significantly reduced through composting.

The key to effective composting in the home landscape is to regulate the conditions under which microbial decomposition takes place. As the successful gardener controls the factors that promote plant growth and development, the successful composter controls the conditions that encourage microorganisms to decompose plants and other organic wastes efficiently. Keep in mind that composting is the compressing of a process that could take years to occur in nature into a period of months or even weeks in the home yard or garden.

## THE COMPOST ENVIRONMENT

For efficient and rapid composting, the microorganisms that do the work need to have the right balance of air, water, carbon, nitrogen, and temperature.

*Compost pile.*



*3-Bin composting unit.*

*Composting cage made of concrete reinforcing wire.*

## Air

Composting is an aerobic process, which means it occurs in the presence of oxygen. The compost pile gets oxygen two ways: (1) by the turning of compost; and (2) by building the pile so surface air can diffuse into the center. When a pile gets too little oxygen, it will become anaerobic, and offensive odors can result.

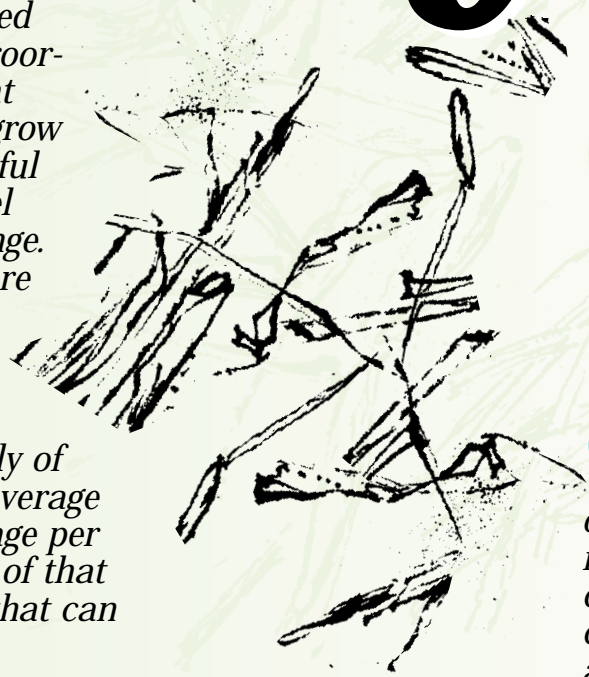


**T**he word compost is derived from two Latin words meaning, “together” and “to bring.” In one sense, it involves bringing together waste materials to ultimately form a single uniform humus. In the technical sense, composting results in the microbial decomposition of organic wastes under controlled conditions.

# Backyard

**W**ater is needed for the microorganisms that decompose waste to grow and multiply. A handful of compost should feel like a wrung-out sponge. Squeeze it and no more than a drop or two should come out.

**I**n Alabama, a family of four generates an average of 2.5 tons of garbage per year. Nearly a half ton of that garbage is yard waste that can be composted.




**T**he 130°F to 150°F temperatures generated in the core of a compost pile is adequate to kill most weed seeds and many pathogenic organisms.

**C**ompost is “finished” or “stable”—ready to use—when most of the original plant materials are not recognizable. Finished compost is dark colored, crumbly, and looks and feels like soil.

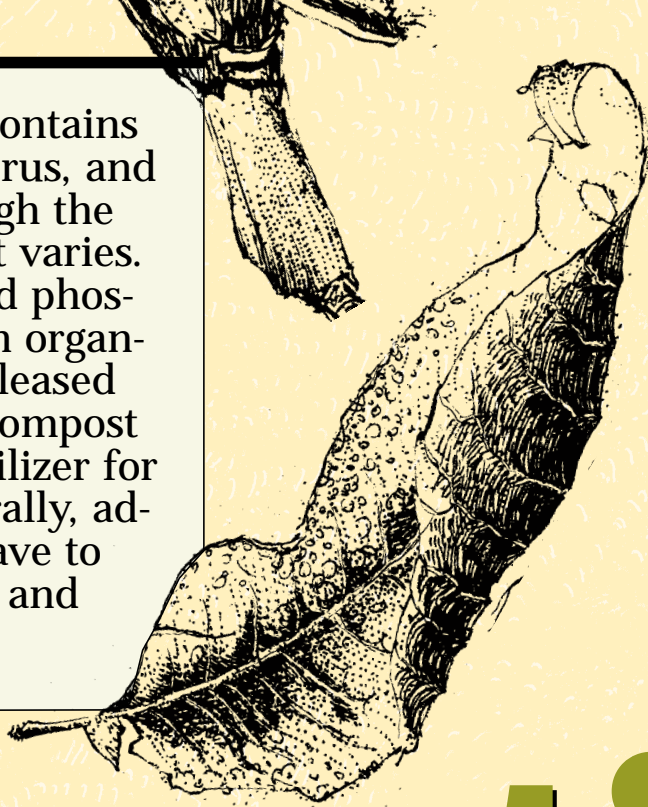
**Y**ard wastes—grass clippings, leaves, weeds, and prunings less than 6 inches in diameter from residences or businesses.





**A**eration—  
contact  
with air  
by turning so  
microbial aerobic  
metabolism  
takes place.

**F**inished compost contains nitrogen, phosphorus, and potassium, although the amount of each element varies. Most of the nitrogen and phosphorus are present in an organic form, and they are released gradually. That makes compost a good slow-release fertilizer for trees and shrubs. Generally, additional fertilizer will have to be added for vegetables and bedding plants.



# Composti

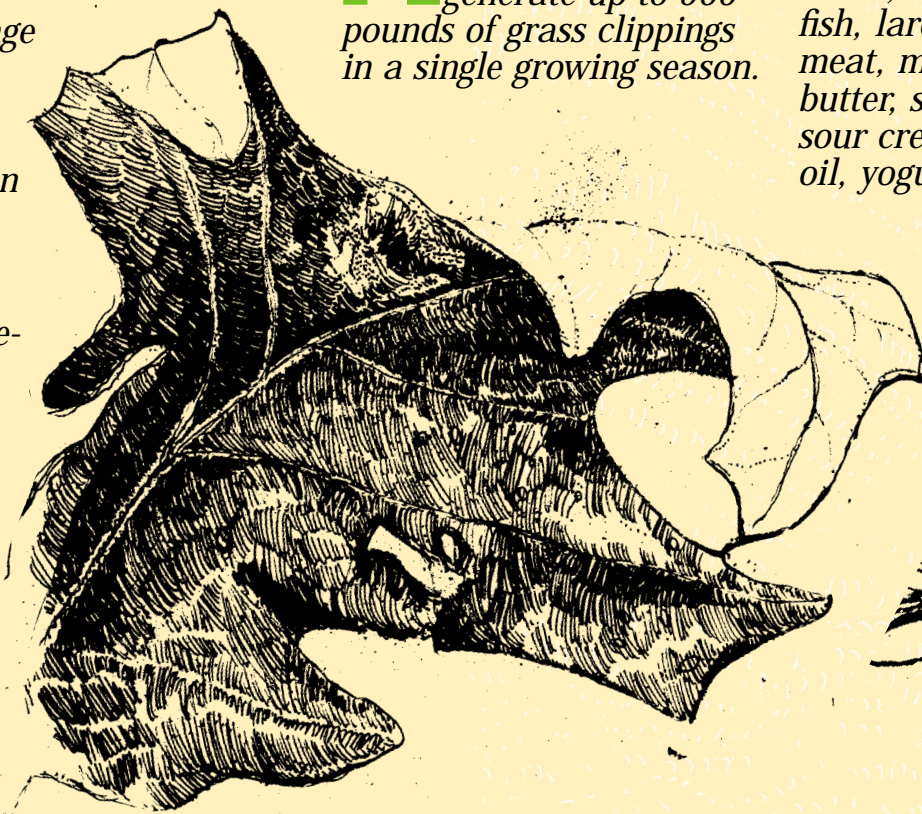
**C**omposting tools are designed to penetrate the pile and open up a passage for air and moisture when withdrawn. Tools are available from seed and garden product suppliers.

**L**eachate—  
liquid that  
drains from  
the mix of fresh  
organic matter.

**A** 1,000-square-foot area of lawn can generate up to 500 pounds of grass clippings in a single growing season.

**DON'T**  
compost fats: butter, bones, cheese, chicken, fish, lard, mayonnaise, meat, milk, peanut butter, salad dressing, sour cream, vegetable oil, yogurt . . . .

**P**athogen—  
any disease-  
producing  
microorganism.



**B**iodegradability—the potential for being converted into simpler structures.

**S**awdust will decompose very slowly unless nitrogen is added. Add 3.5 pounds of actual nitrogen to each cubic yard of sawdust, or add 11 pounds of ammonium nitrate.

**C**ompost tilled into a sandy soil improves the soil's capacity to hold water and nutrients. Added to a heavy clay soil, compost increases the air spaces between clay particles, which improves drainage and increases soil aeration. In either soil extreme plants are benefited.

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**C**ompost kitchen scraps, including apples, cabbage, carrots, celery, coffee grounds, egg shells, grapefruit, lettuce, onions, oranges, pears, pineapple, potatoes, pumpkins, squash, tomatoes, turnips—just about any vegetable waste.

## Water

Microorganisms need water to survive and function. Ideally, the moisture content of the compost pile should be between 40 and 60 percent. The compost should be moist when squeezed but not dripping wet. If too wet, the decomposition process will slow down.

## Carbon And Nitrogen

The microorganisms that do the composting need food. They get energy from materials high in carbon (carbohydrates such as cellulose, lignin, and complex sugars in plant residues.)

They also need protein, which they manufacture from materials high in nitrogen (manures, kitchen scraps, and fertilizer nitrogen).

The ratio of carbon (C) to nitrogen (N) is important. If there is too little N, the microbial population will not grow to an optimum size, and decomposition will slow down. On the other hand, while too much N compared to C allows rapid microbial growth and speeds up decomposition, it can result in depleted oxygen and odors as the excess N is given off as ammonia gas. The optimum C:N ratio is about 30:1.

If materials added to the pile have a high C:N ratio, then some N should be added to more closely approximate an optimum C:N ratio. For example, if sawdust is placed in the pile, then some N fertilizer,

grass clippings, or manure should be added at the same time.

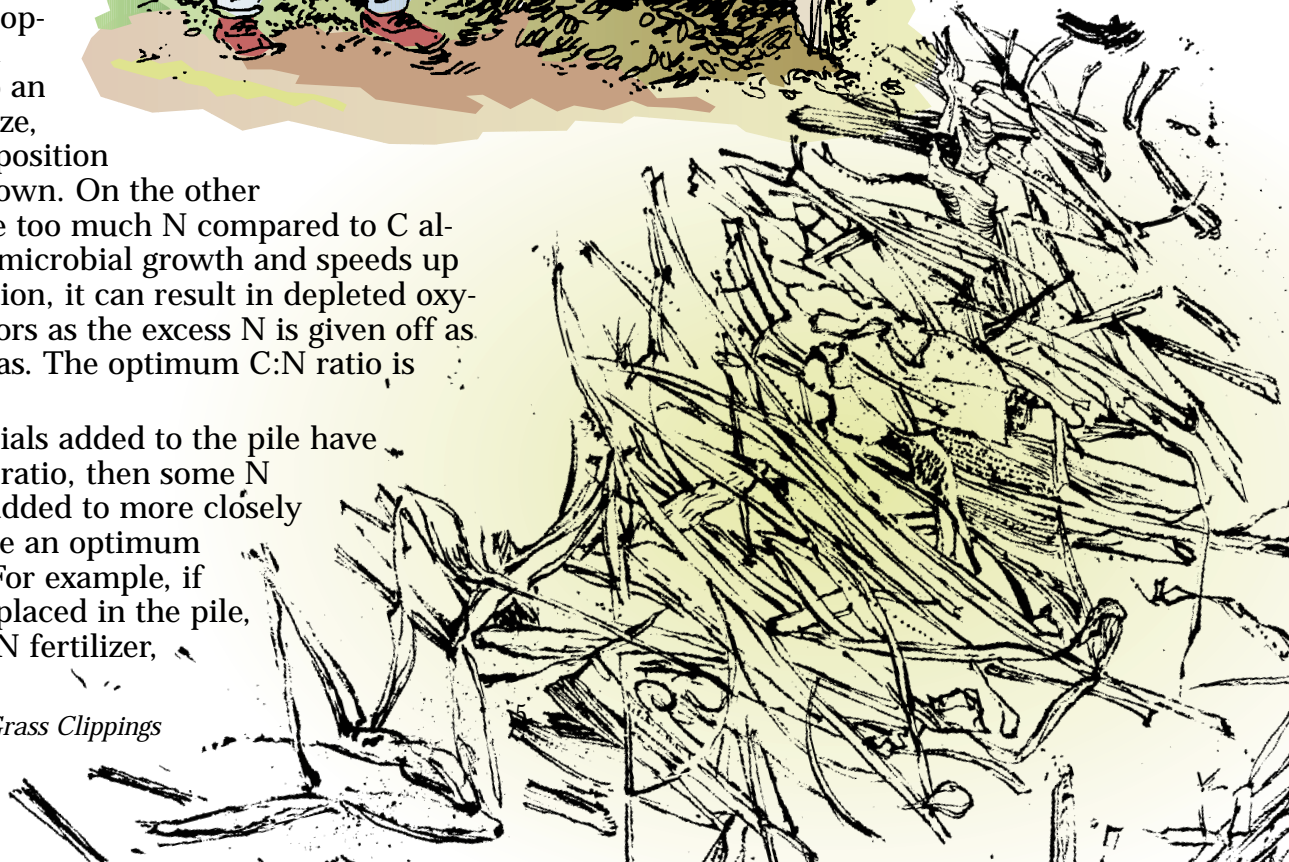
Surface area is important in this relationship because carbon in leaves is much more available than the carbon in a large wood chip. Small chips give the microorganisms more surface area on which to feed. A leaf shredder or chipper is useful equipment for preparing an efficient compost pile.

## Temperature

As the microorganisms grow and multiply, they generate heat from metabolism. Heat is beneficial in that it destroys many kinds of weed seed and disease organisms; however, when temperatures rise above 140°F, the beneficial microorganisms start to die. Turning the pile when temperatures reach this point will prevent overheating and will speed up the entire process.



*Grass Clippings*



# MANAGING THE COMPOSTING PROCESS

Any number of systems may be used to contain and manage compost. But any compost system that you choose should be determined by how well you will be able to manage the compost process. Whether using a cage, a pile, or a turning unit, the following sequence should be followed to properly build and manage the compost.

Construct a compost pile in layers, alternating yard wastes, a nitrogen source, if needed, and soil or finished compost (to provide an inoculation of beneficial microorganisms). Begin with a 6-inch layer of coarse materials such as small twigs or branches. Then place finer materials such as leaves or grass clippings in a layer about 6 to 8 inches deep. If wood chips or other higher-carbon materials are placed in this layer instead of leaves or grass clippings, add about 1 cup of 10-10-10, 10-6-4, 13-13-13, or similar analysis fertilizer, or manure. The final layer consists of soil or finished compost 1 to 2 inches deep.

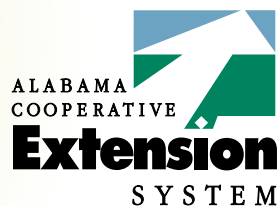
This sequence of layers is repeated with the exception that the coarser material is omitted with subsequent layers. Just about any plant waste can be added to the compost pile. Kitchen scraps such as vegetable and fruit scraps, egg shells, and coffee grounds can be added to the pile, but make sure they are buried in the pile to avoid odor. Do not add meat scraps, bones, or fats to the compost pile because they will attract unwanted animal and insect pests.

Turn to mix the compost periodically, ideally after the temperature in the middle of the pile has reached 140°F, to encourage uniform aeration of the pile. Add water if the pile dries out. Compost can be ready to use in as soon as a month or as long as a year, depending on the kinds of materials added and how the compost pile is managed. Finished compost should look like a uniform potting soil with little distinguishable evidence remaining of what materials were originally added to the pile.

## USING FINISHED COMPOST

Compost can be used to improve soil aeration and structure, add nutrients to garden soil, and hold water and nutrients in sandy soils. Compost can also be used as a mulch to conserve soil moisture, suppress weeds, prevent crusting of the soil surface, and buffer soil temperatures.

Composting is an inexpensive and ecologically sound way to recycle yard and garden wastes, improve your soil, cut down on waste disposal costs, and save considerable space in our bulging landfills.



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