

The Compost Process

Municipal Yard Waste Composting Operator's Fact Sheet #1 of 10

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A basic understanding of the compost process can help produce a high-quality product, while preventing many common problems. The microorganisms that do the work in composting have a few basic requirements which need to be provided. Air, water, the right food and temperature combine to create a good composting environment.

Composting is an aerobic process, which means it occurs in the presence of oxygen. Oxygen is provided in two ways:

1. by turning the compost, either by front-end loader or a specialized compost turner.
2. by building the pile correctly, so surface air can diffuse into the center. When a pile gets too little oxygen, it will go anaerobic, and offensive odors may result.

Microorganisms need water, just like you or I. Ideally, the moisture content should be between 40 and 60 percent. Too wet, and anaerobic conditions result; too dry, and the decomposition process will slow way down.

Bacteria, fungi, and other microorganisms get their energy from carbon sources, such as leaves, brush, or wood chips. Nitrogen is required for population growth, but excess nitrogen can generate ammonia and other odors, and can pollute runoff water. If high nitrogen materials such as grass clippings are used, they must be thoroughly mixed with a carbon source. Surface area is also important in this relationship, as the carbon in leaves is much more available than the carbon in a large wood chip.

As the microorganisms are working away, decomposing waste, they generate heat. When temperatures rise above 140° F, the organisms start to die. Turning the pile

when temperatures reach this point will prevent overheating, which can result in drastic population fluctuations and odors.

Eventually, the microorganisms will use up most of the readily decomposable waste, and the composting process will slow. Temperatures drop, and the compost takes on a dark, granular texture. At this point, the compost can be placed in large stockpiles to cure and will continue to improve until it is ready for use.

Optimal Composting Conditions

Oxygen	>10%
Moisture	~40-60%
Carbon:Nitrogen	30 : 1
Temperature	90-140° F

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