

## COMPOSTING: NOT A NEW IDEA -- JUST A GOOD ONE

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In this modern age of ecology, some old truths are being rediscovered. One of the oldest, with its origin lost in antiquity, is the practice of composting! George Washington wrote about it in 1760 and even earlier references about it can be found in the Bible.

Not only does composting recycle organic wastes and reduce pollution, it can also save you money! Many golf courses spend hundreds perhaps thousands of dollars a year with a hauling company to dispose of their organic trash; tree limbs and trunks, leaves, clippings, brush, old sod, anything that was once alive. The same clubs will also spend hundreds (perhaps thousands) of dollars annually in purchasing peat moss, soil amendments, mulch and other organic materials for top-dressing, flower beds, new construction, etc. It's kind of strange when you think about it. They could be doing their own recycling and, in the years ahead, I believe more and more clubs will be doing just that.

Composting is nothing more than putting nature to work for you free of charge. Composting is encouraging the myriads of microbes in your neighborhood to decompose organic materials also in the neighborhood and for which you have no further use. Almost any natural organic product can be composted with proper care. Leaves, grass clippings, weeds, hay, sawdust, wood chips, garbage and even corn stalks will decompose. The microbes are not choosy. But they must have the right kind of climate for their activity. This includes proper aeration, moisture, nutrients and temperature. These are the factors that control the speed and success of the compost pile.

Aeration - Air is as essential to the microbe as it is to the human being. Oxygen must penetrate the entire compost pile. Compost heaps should therefore be built no more than 6 feet high. The width and length may be adjusted as to need and space available. Grinding the materials prior to composting speeds their decomposition by increasing their surface area and hence their susceptibility to microbial invasion. It also increases oxygen availability at the surface of the particle. Furthermore, the turning or loosening of the pile is important from time to time in order to assure good aeration.

Moisture - The moisture content of the pile is important in composting. At moisture contents below 40% (wet weight), organic matter will not decompose rapidly. If the moisture content exceeds 60%, the process tends to become anaerobic and the pile may have to be loosened. The best range is between 50% - 60% wet weight moisture. Maintaining moisture at the edges of the heap can sometimes be a problem and some kind of bin or trench is helpful. Snow fencing with posts at the corners makes a satisfactory bin. No floor is needed and, by all means,

be sure good drainage is provided at the base of the storage area.

Nutrients - On some occasions, nutrients are initially added to the compost pile. The addition of about 15 pounds actual nitrogen (30 pounds of urea) per ton of dry material is suggested. This should maintain the proper carbon to nitrogen ratio for decomposition. Bear in mind, however, that excessive fertilization of the pile does not speed decomposition.

Some scientists have reported that small amounts of phosphate fertilizers mixed initially into some composts increase decomposition and nitrogen conservation. However, larger amounts of phosphate are found to have inhibitory effects. Therefore, don't overdo the phosphate. Late research also shows that nitrogen can be conserved by not using limestone as has been recommended in the past.

Temperatures - If all other factors are favorable, the microbes themselves produce heat as a by-product of decomposition. They release large amounts of it and, since the pile is nearly self-insulating, the temperature rises. Microbes that grow best at ordinary temperatures initiate the decomposition and carry it on until a temperature of about 115° is reached. They then die. Another group of microbes take over and raise the temperature inside the heap to 140° to 170°. This rise in temperature, which usually persists two or three weeks, indicates that composting is going well and greatly shortens the time needed for plant material decay.

Again, let's emphasize the importance of turning the compost heap. It hastens decomposition by increasing the supply of oxygen to the microbes. Heaps are turned in some commercial operations every three or four days while in farm or gardening operations, a turn at least every three weeks is recommended. Frequent turning also assures better mixing and more uniform decomposition of the heap.

Added Notes - We occasionally hear recommendations favoring the inoculation of the pile with prepared cultures of microbes. This is supposed to hasten the process and lead to a better product. From research evidence to-date, additives do not appear justified except in a few special instances. In composting sawdust for example, and inoculation with spores of the fungus Coprinus ephemerus and addition of ammonia, phosphate and potassium sulfate was found to decrease composting time from one to two years to three months!

Mixing small amounts of soil into composts has also been found unnecessary. However, if you have some soil handy, it may help to conserve nitrogen and other nutrients within the pile. If placed around the outside of the pile, the soil will help conserve moisture.

When It's Done - If everything goes along well, full composting usually requires about three months for completion. Under commercial conditions with large heaps and frequent turning, composting time may be reduced to two or three weeks. In any event, the process is complete when interior temperatures drop to the air temperature and the

material crumbles easily in your hand.

The material is then ready for incorporation in your top-dressing preparations, flower beds or other plantings. It's as fine a product as anything you can buy and an awful lot less expensive. And just think, you have now entered a new business; the recycling business!

If you are interested in knowing more about compost development and management, two excellent references are:

"The Biochemistry and Methodology of Composting",  
Bulletin #727, Connecticut Agricultural Experiment Station  
New Haven, Connecticut

"The Yearbook of Agriculture - 1957 - Soil",  
United States Department of Agriculture,  
Washington, D.C.

Your County Farm Advisor should also have a wealth of information on the subject.

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