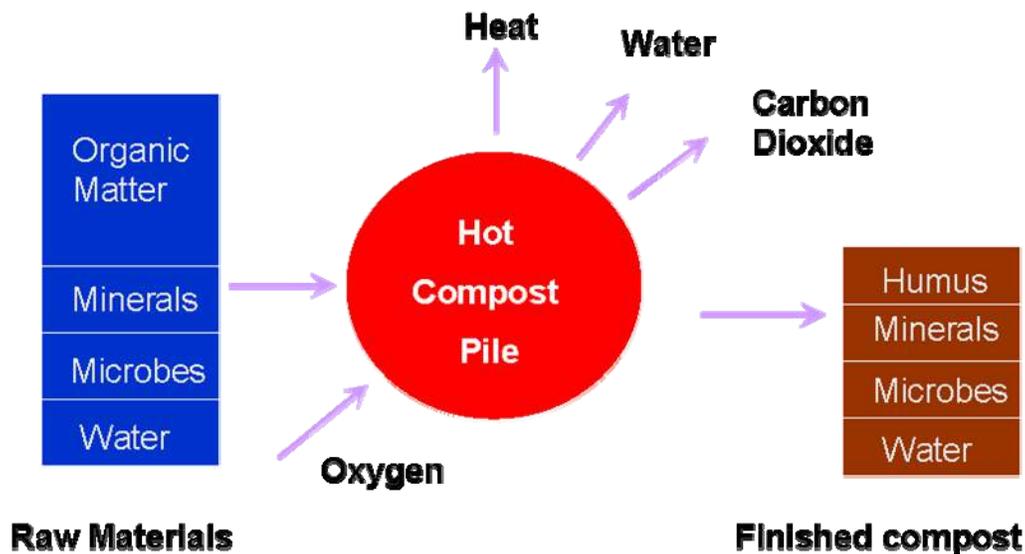


Compost Quick Course

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Composting is the transformation of plant material, animal manure or bedding, and other organic matter or nutrient sources to a stable and concentrated source of organic matter (humus), plant nutrients, and biological diversity called compost. Compost can be used to improve soil water absorption and retention and to provide nutrients and the organic matter necessary to maintain the microbes in the soil that provide nutrients for plant growth.

It's Alive! The compost pile is alive and can be compared to farm animals like horses and cows – billions of microorganisms are breathing in oxygen and releasing carbon dioxide. There are several factors that can be managed during composting.



➤ **Food:** the balance of carbon (browns/dead) and nitrogen (greens/recently alive). Usually the pile is mixed with two or three times more browns than greens. The goal is for the mixture to have a C:N of between 25:1 and 45:1 for hot composting.

➤

Here is a compost recipe that can be made just about anywhere:

- 2 bales straw (carbon/brown)
- 2 bales softwood shavings (carbon/brown)
- 1 equivalent bale of moist, decayed tree leaves (carbon/brown)
- 1 bale grass hay (first cutting) or comfrey (nitrogen/green)
- 1 bale alfalfa hay (second cutting) (nitrogen/green)
- 1 to 3 equivalent bales of garden or kitchen residues or animal manure
- 1 bale of peatmoss (Neither brown or green so neutral)
- 1 equivalent bale of soil or garden/veggie compost (neither brown or green so neutral)

➤ **Air:** is influenced by particle size, pile size, and turning.

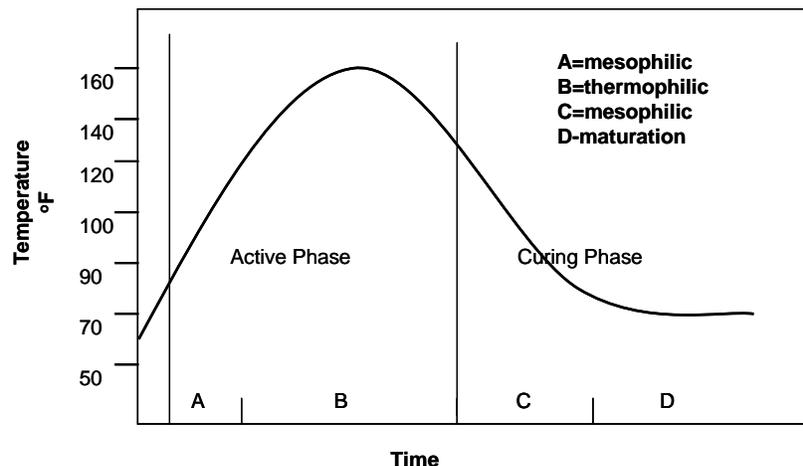
Aeration is managed by not allowing the pile to be too wet or too large. The size of the pieces of materials in the pile also influences aeration and the rate of composting. Very small pieces increase the rate of breakdown and slow the movement of oxygen into the pile. Larger pieces are slower to break down and can provide channels for air to enter the pile.

- **Water:** lack of water is often the factor limiting the development of heat in a compost pile. Excess water is the most common cause of bad odors that might develop. A quick and simple method of determining moisture content is called the squeeze test.
 - Grab a handful of feedstock or compost and make a fist around it. If it releases a stream of water or you can squeeze out several drops of water, the moisture is greater than 65 percent.
 - If the squeezed handful of compost leaves the skin wet but does not release more than a drop or two of water, then the moisture content is in the desired 50 to 60 percent moisture range.
 - If the squeezed handful of compost falls apart when you open your hand, the moisture is probably below 45 percent which is too low.

- **Temperature:** is influenced by the food mixture, the air, water, pile size, turning, etc. A pile needs to be at least 4 feet around and 3 to 4 feet tall to become hot. Why does a pile get hot? Because of the rapid increase in the number of organisms present, particularly a type of bacteria that survives and thrives at high temperatures (thermophilic bacteria). Heat can reduce the presence of viable weed seeds and organisms that feed on living plants. The goal is to get the pile to temperatures of 120 to 140 Fahrenheit. If you dig your hand into the pile and the temperature is too hot to keep your hand there for more than 10 seconds, the temperature is probably more than 130 F. A compost thermometer is a good investment. A meat thermometer will work.

- **Microbes:** the necessary organisms / microbes will be present and purchased additives are not needed. Management can influence the relative amount of bacteria or fungi that are present

- **Time:** The composting process goes through stages that include the first active or hot stages that require more air and water followed by a lower temperature curing stages. The organisms present change during the stages. Composting can happen quickly at high temperature (3-4 weeks) or slowly at lower temperatures (3 to 4 months). Nutrients will increase over time and enough time must be allowed for the organic materials to become stable (2 to 4 months) if it will be used for starting seeds. The final C:N is usually between 10:1 and 20:1.



Using Compost

Compost nutrient levels can be tested like soil nutrients are tested. Growing some seeds in the compost like corn or beans or sunflowers can provide an indication of the amount of available nutrients. Finished compost is applied to the soil at rates from 5 to 50 ton per acre or 1 to 10 five-gallon buckets (about 20-25 lbs/bucket) per 100 square feet. This would range from less than one-quarter inch to one inch deep. More than that is not needed and not recommended. The compost can be worked into the soil surface or incorporated deeply. Compost can also be mixed with sphagnum peat moss at ratios of between 1:1 and 1:2 and used as a seed germination media.

For a more detailed article about compost see the resources tab at www.msuorganicfarm.org.