

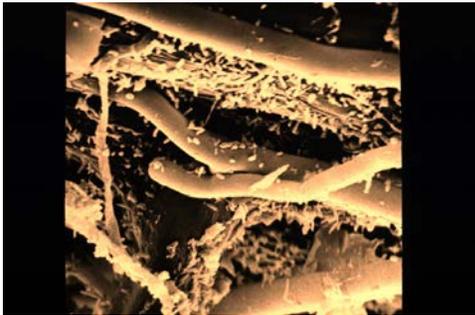
Composting: “Microbe Farming”

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Microorganisms (microbes) are the “work horses” that make composting happen. That is why some people refer to composting as “microbe farming.” Like farm animals, microorganisms need water, food, and oxygen to stay alive and thrive.

Microorganisms are living organisms that are so tiny you can only see them through a microscope. The following are some examples of microbes you will find in a compost pile.

Bacteria are by far the most abundant microorganisms in a compost pile. They make up 80 to 90% of the microbes! Although bacteria are the smallest living organisms, they are responsible for most of the decomposition and heat generation in the composting process. Bacteria don't have mouths, so they produce enzymes to break down a variety of organic materials.



Fungi, which consist of molds and yeasts, break down tough organic debris in compost piles. They can decompose materials that are too dry, acidic, or low in nitrogen for bacteria to process. Fungi are most active during composting's mesophilic phases, when the pile temperatures are below 105 degrees Fahrenheit. When the pile's temperatures are high, most fungi live in the outer layer of compost.



Actinomycetes look like fungi, but they are actually bacteria with filaments. They cause the earthy smell of compost or soil. Actinomycetes degrade the “tough stuff” like cellulose, lignin, chitin, and proteins that are found in bark, woody stems, and paper. Some of these species are active during the thermophilic phase of composting (above 104 degrees Fahrenheit), and others are found in the curing phase (below 105F). They look like gray spider webs in compost piles.



Protozoa and **Rotifers** play a minor role in decomposition. You will find them in water droplets in compost piles. They consume organic materials similar to bacterial activity. But watch out...these organisms also eat bacteria and fungi!





You don't need a microscope to see **macroorganisms** that also live in compost piles. Mostly invertebrates, these include earthworms, nematodes, springtails, centipedes, mites, spiders, ants, snails, sow bugs, and slugs. As macroorganisms forage and graze in the compost pile, they support and increase microbial populations by making organic matter more available to them.

