

A bug's life

Amongst the decaying organic matter of a compost heap lives a complex food web, with organisms working away behind the scenes and mostly out of sight to us humans. Resource got together with **George Pilkington** to break down who's doing what



ACTINOMYCETES

With their long, thread-like filaments, these organisms are responsible for the delicious earthy smell of soil. Primary decomposers, actinomycetes' enzymes break down tough, raw plant tissues (cellulose, chitin, and lignin), softening and decomposing them for other organisms. One well known aerobic species is *Streptomyces*, used in the production of antibiotics.



NEMATODES

Nematodes drink liquids from decaying organic matter and eat fungi, bacteria, microbes, other nematodes, rotifers, protozoas, slugs and mites. Even though they may not contribute significantly to the decomposition process directly, they provide an important food source for others, including mites, springtails or even predatory fungi.



BACTERIA

The smallest and most numerous living organisms in compost heaps, bacteria make up 80 to 90 per cent of the billions of microorganisms typically found in just one gram of compost. Some release nutrients, improve soil structure, help decompose plant and animal material and can even fix nitrogen from the air, depositing it on the roots of certain plants.



PROTOZOA

These one-celled microscopic animals need moisture to live. In general they feed upon bacteria. Although this might appear a bad thing for the system, it may actually contribute to the nutrients available to other organisms. It has been suggested that protozoa play an essential role in the diet of some species of earthworm – especially the composting worm, *E. fetida*.



FUNGI

Fungi spores will happily make a home and start work in compost. The most beneficial ones break down organic matter, including lignin and cellulose – producing humus. Some depend upon other creatures, such as worms and woodlice, to break up the material, making it easier for the fungal mycelium to enter.



ROTIFERS

These critters, that appear to whirl like a wheel as they propel themselves forward, can be found wherever there is moisture – from compost heaps to rain water gutters. They feed on organic matter, bacteria and fungi. The vortex feeders among them feed by creating currents within the water between the soil or compost particles, while their tiny hairs move rapidly to catch particles of organic matter and tiny soil microorganisms in the whirlpool.