

Making compost

Organic material

Organic material is the material found in the ground that was formed by the decay of once-living organisms such as plant and animals. This does not include any living organisms even those these are made up of organic compounds.

It is a mixture of organic compounds, all made from atoms of the elements carbon and hydrogen. Some organic compounds are made from atoms of other elements, such as oxygen and nitrogen, as well as carbon and hydrogen.

Organic matter is made when dead organisms such as plants and animals decompose and decay. It happens at the end of every food chain. Food chains show energy is transferred through an ecosystem.

Autotrophs are organisms that make food for animals to eat. They are producers. They synthesise organic compounds from inorganic compounds (carbon dioxide, nitrogen and its compounds, water, oxygen etc).

This food feeds herbivores, animals that eat only plants. These animals are called primary consumers. Carnivores (meat eaters) that feed on herbivores are called secondary consumers. Carnivores that feed on other carnivores are tertiary (or higher) consumers. This series of events is a food chain. When producers and consumers die they decompose, with the help of bacteria which are called decomposers.

An example of a food chain:

| Producer | Primary consumer | Secondary, tertiary etc consumers |
|------------|------------------|-----------------------------------|
| Autotrophs | Herbivores | Carnivores |
| Grass → | Grasshopper → | Toad → Snake → Hawk |

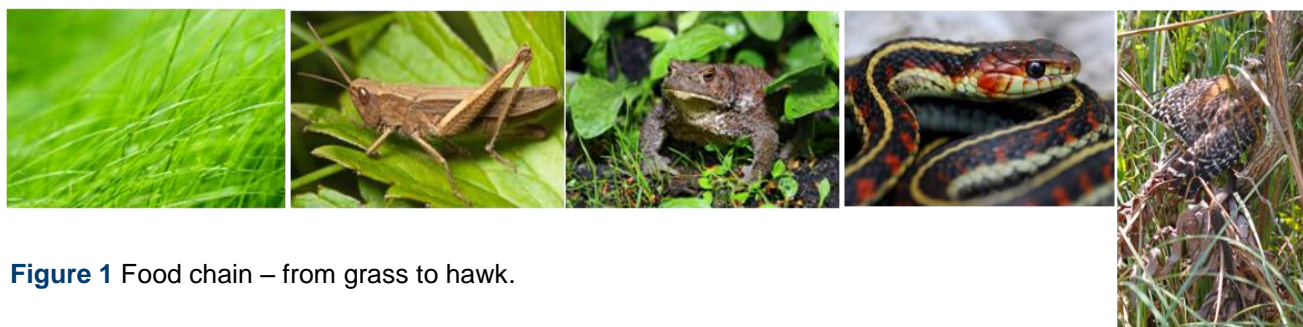


Figure 1 Food chain – from grass to hawk.

Food chains are interlinked to produce, often complex, food webs.

What is compost?

The word 'compost' has two meanings.

- Compost used for growing seeds and plants in containers. These composts may be soil-based or soilless. A wide range is available.
- Compost formed by rotting and decaying organic waste, usually in a compost heap. It is used to add organic matter to soil to improve the water-holding capacity of light soils and the drainage of heavier soils.

Because of the potential for confusion, it may be better to call composts that plants are grown in 'growing media' and use the term compost to mean only the product of organic waste decay.



Figure 2 The tomato plants are being grown in compost. The other picture shows the other meaning of compost – organic waste that rots down and decays to produce material used to improve the texture of soil. Decay happens naturally, but farmers and other growers often gather together dead plants and animal waste in piles, bins and composters to convert them into compost.

An exothermic process

When they respire, organisms return some carbon, as carbon dioxide, to the atmosphere. However, far more carbon dioxide is produced when decomposers act on dead organisms.

The decomposition process is exothermic. Energy is transferred from the rotting material to the surroundings.

Finding out

The huge increase in recycling of decomposable materials led to a lot of bad practice, including 'shred and spread' of plant and food waste on agricultural land before it was broken down into compost.

Some companies offer compost testing services.

Questions that might be considered:

- Why would 'shred and spread' cause problems?
- What is PAS 100?
- What needs to be tested?
- Why is it important that such testing is carried out?



Figure 3 On a cold day steam can be seen rising from a compost heap. Energy transferred from the decaying organic material is transferred to water in the heap and evaporates it. When this reaches the cold air, the water vapour condenses to produce a cloud of steam.