SOILS OF THE CROFTS

What is in our soils?

Soil is essential to life. Healthy soil produces food and provides clean and fresh water to help plants grow. Living organisms in soil break down organic matter and minerals to release nutrients for plant growth and development.

In a soil which is not managed by humans, soil organic matter comes mainly from dead leaves and fungi and the bodies of dead animals and insects. Plants cannot directly use most of the minerals and other essential elements in organic matter so they have to be converted to a useable form.

Soil biota so tiny you need a very powerful microscope to see them begin the process of decay which releases nutrients into 'organic carbon compounds', which plants can then convert into food. Larger life forms help break down organic matter further but the type of organic matter and other factors like temperature and moisture can affect what sort of organisms might be present in a soil.

DID YOU KNOW?

Crofters often apply seaweed, animal manure or compost to their soils to boost their organic matter content.

Bacteria

Bacteria are very small living things in soil, they don't have stomachs like animals so instead digest food outside of their bodies. During this process chemicals are extracted from the atmosphere and organic matter and released into the soil for use by plants.

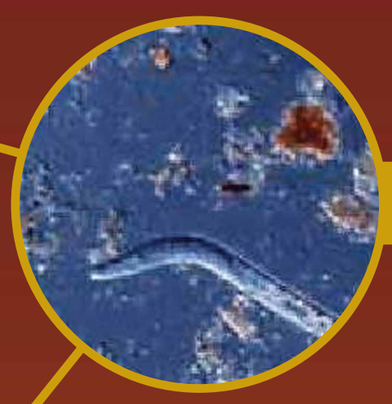
Algae and Fungi

Algae are classed as plants, using photosynthesis to derive their energy and occur as either single cells or in large chains of organisms. They can only live where there is sufficient light; thus they tend to be found on the surface of soils. They often grow on bare rock secreting sugar molecules called 'polysaccharides' which help bind soil particles together and act as a food source for other organisms, e.g. bacteria.

Fungi is the name given to mushrooms, toadstools etc. Fungi help recycle nutrients within soil as they can break down complex molecules which would otherwise remain 'locked-up' and unusable. Fungi reproduce by producing spores which are similar to seeds and prefer damp, acidic conditions.

Protozoa

Protozoa are micro-organisms made up of single cells – they are the smallest of all animals. They are typically found in the top 15–20cm of soil. They feed on bacteria and fungi; thus they are important in cycling nutrients that bacteria and fungi originally obtain from the soil organic matter. Protozoa often have little hairs, called 'cilia'. These hairs enable some protozoa to swim through water in their search for bacteria to feed upon.



Nematodes and Enchytraeids

Nematodes are roundworms about 1mm in length and swim through soil water feeding on organic matter, bacteria, fungi and algae. By feeding on fungi and algae they release the nutrients locked up in them.

Enchytraeids are also worms but then they can grow up to several cms in length. They feed on organic matter and help to spread fungal spores and bacteria throughout the soil. They are known for their ability to adapt to many soil environments including acidic and peaty soils which makes them an important nutrient recycler in many soil ecosystems.

Earthworms

There are over three thousand species of earthworms in the world. Most grow slowly, taking 1-2 years to mature and live for up to 4 years.

Earthworms feed on organic matter either within the soil or on the soil surface. They produce burrows in the soil, which aids drainage; they also mix the soil up and transfer organic material and associated nutrients from the surface deep into the soil. The burrows form when the earthworms feed and they protect the earthworms from temperature variations within the soil, such as when there is a frost. Earthworms prefer a temperature range of 0-35°C and a soil pH range of 5–7.

Peat soils are too acidic for earthworms, even though there is a lot of organic matter there for food. Very sandy soils, e.g. in the Machair, tend to be too dry and abrasive for earthworms and very clay rich soils tend to have too little food and not enough oxygen for the earthworms to thrive. Earthworms prefer brown earth to any other soil.

BUILD YOUR OWN WORMERY

1 Cut the top off a clear plastic drinks bottle (3 or 5 litre size is perfect).

2 Punch holes in the bottom for good drainage. (worms don't like waterlogged soil).

3 Put a 3cm layer of horticultural grit or sand in the bottom (this helps drain the soil).

4 Add about 2cm shredded or torn moistened newspapers (recycling too!).

5 On top of this put a 10cm layer of compost.

6 Add some more dampened shredded paper.

7 Add worms on top in their new home.

8 Cover wormery with fine mesh held in place with an elastic band and place on saucer for drainage water.

FINALLY:
Keep in the dark, feed them with lettuce, and watch them recycle.

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