

SOILS OF THE CROFTS

Soil Variation

Have a look at some of the most common soils in Scotland's crofting counties, as well as a couple that are only found in certain parts of the country, and how those soils are used and managed by crofters.

Crofting areas in Scotland have cool and generally wet climates, which helps peat soils to develop. Ancient woodlands helped brown earth soil to form, leaching under wet and acid conditions allows podzols to form and although the woods are often gone now, the soil remains as podzols. When a soil becomes water saturated a gley soil can develop. In coastal areas crofts sometimes have soils which have developed on beach sand called Machair. The parent material influences the soil type and in a few areas the serpentinite rocks develop a rare soil called serpentinite soil.

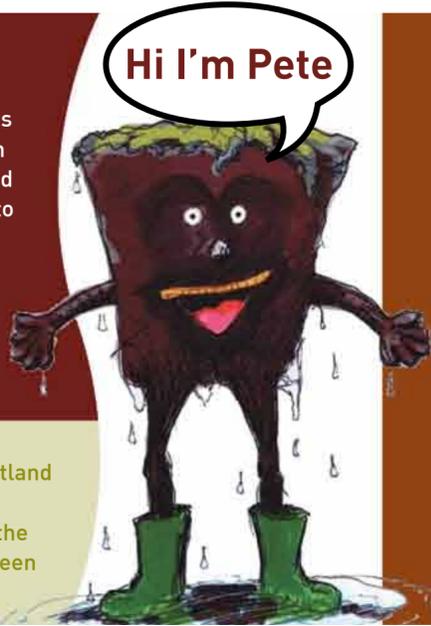
1 Peat

Peat forms in very wet conditions where plant leaves, shoots and roots die and are very slowly decomposed over time. On average peat accumulates at about 1mm per year, is wet and very acid, so only those plants which are specially adapted to those conditions can grow.

While it is not much use for farming, it is still sometimes used as fuel (after it is dried out) and can be used to increase organic matter in soil. It is a great resource for carbon storage and is rich in biodiversity.

DID YOU KNOW? Peat is an important resource in helping Scotland combat climate change. It contains carbon which was taken from the carbon dioxide in the atmosphere by moss and other plants. That process has been going on since the last ice age, so that's a lot of carbon.

Hi I'm Pete



2 Brown Earth

As you might guess from their name brown earths are a deep rich brown colour, but more importantly tend to be much more fertile. They are more common on the east coast and in drier, warmer environments.

Brown earths form on rich parent material, which contains a good balance of elements such as calcium and aluminium which produce pH neutral or alkaline soil. Earthworms prefer this type of environment which means the soil organic matter and minerals get naturally well mixed.

Brown earths were also called brown forest soils and can support broad-leaf trees like oak. They are work-able and productive for farming. You do find them in the crofting areas, with large pockets in East Sutherland, Caithness and in Orkney where they provide valuable grazing land.

Hi I'm Rusty



3 Podzol

If a soil has organic matter in the top layer but underneath the mineral soil is much drier and more naturally freely draining, you are likely to find a peaty podzol.

Podzols form in areas covered with trees or sometimes heath and over time as the water draining down through them gradually washes some of the chemicals downwards from top to bottom. This produces an 'ashy' colour in the B horizon.

In lower-lying areas and on more gentle slopes they can be cultivated, although they generally need to have lime and fertiliser added to raise the pH and provide enough nutrients to grow crops.

Hi I'm Heather



4 Gley

When a non-peaty, relatively dry soil becomes permanently or periodically saturated then it can become 'gleyed'. This means that any air spaces in the soil are filled with water and so microbes living in the soil eventually use up all the oxygen and cause the soil to turn blue-ish grey. If the soil is exposed to the air again, the oxygen makes the colour return often in the form of orange mottles.

Despite being so wet, some of these soils are reasonably fertile, so it can be worth draining them so they can be cultivated. Large parts of Caithness and Orkney had extensive areas of gleyed soils that have now been drained and provide good grazing.

Hi I'm Claude



5 Machair

Machair' in Gaelic means 'low-lying plain' and is often used to describe the level ground immediately behind sand dunes next to the sea. The sand dunes are made up of quartz and marine shell sand and as the shells break down they release calcium. This provides a calcium rich parent material which is alkaline, free draining and very fertile.

What makes the Machair so important to crofting is that, in an area which is mostly dominated by acid peaty soils, this land is a pocket of fertile soil of higher pH which is well suited to growing crops and providing pasture land where cattle and sheep can be fed over winter.

DID YOU KNOW? If you look very closely at Machair sand you will see that it is made up of billions of tiny fragments of marine shells. These shells started off intact but have spent many thousands years being rolled around and broken up in the sea.

Hi I'm Mac



6 Serpentine

An unusual type of soil closely associated with crofting areas is formed from rocks rich in the mineral Serpentine.

These rocks are rich in elements such as nickel (Ni) and chromium (Cr), but often lack essential nutrients such as phosphorous (P), nitrogen (N) and potassium (K).

Vegetation communities need to adapt to these unusual conditions and they support a very characteristic mosaic of vegetation – wind clipped heather and pasture more suited to animal grazing.

Arable agriculture is possible with the addition of large amounts of fertiliser but the ground is much more suited to animals.

If you want to find out more about the soil characters and their health see www.hutton.ac.uk/learning/dirt-doctor

Now go and see what soils you can find around where you live!