



Topic 12: Soils of England and Wales



Introduction Although you may think there are just one or two types of soil in Britain you would be wrong. Britain has over 700 different types of soil which is a lot considering its small size compared to many countries. The reason for this is that it has a wide range of rock types and quite a varied climate. There are examples of rocks in Britain from all the geological periods going back two billion years. As we have seen conditions in which the rocks formed throughout time varied greatly, from hot sub-tropical through to the frozen barren wastes of the Ice Age, and this variety of rocks and sediments has become the parent material of the soils of Britain. The annual rainfall, a major factor in soil formation, varies from as little as 250 mm in southeast England to over 2000 mm in northwest Britain and the mountains of Wales. This diversity of rocks and climate is the main reason why there are over 700 different types of soils here. Other factors such as vegetation, landscape, time and the influence of man have also influenced soil formation.

Soil Classification

- (i) Just as we have classified plants and animals and given them names, so we have classified soils. The classification of soils is much more recent and the names given to soils are not as well known.
- (ii) There are several levels to the classification of British soils. There are just 10 major groups of soils in Britain but at the most detailed level which is used when making detailed maps of soils throughout the country there are over 700 types of soil.
- (iii) Here, we shall just introduce you to some of the 10 main types of soil. This will give you some idea of the difference between the soils of Britain



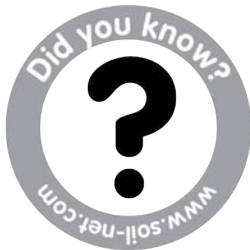
Brown Earths

- (i) The brown earth is one of the most widespread soils in Britain and is the 'type' soil for the temperate world climatic zone in which Britain lies.
- (ii) The soils are characterised by a dark brown surface layer called the A horizon which contains most of the organic matter. Below this is a brown layer called the B horizon, and further down is the parent material which may be rock or sediment.
- (iii) The brown soils are generally quite deep, well drained, fertile soils, good for farming, and most of British agricultural production depends on these soils.



Gley Soils

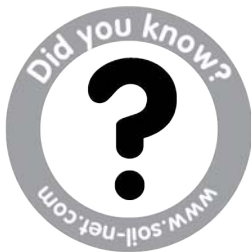
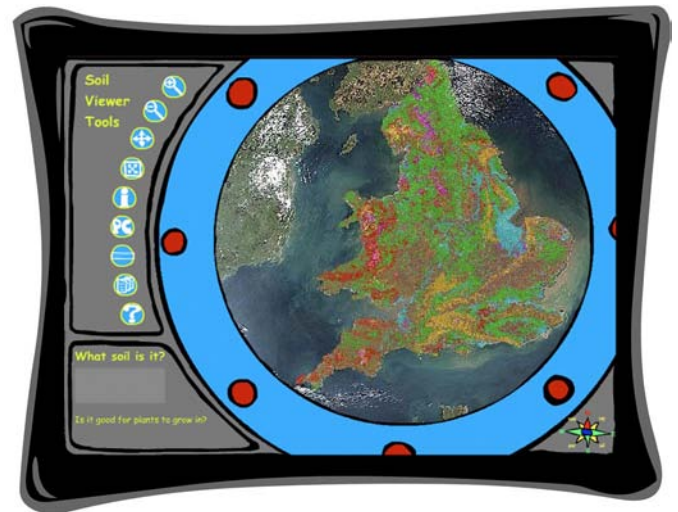
- (i) These are the most widespread soils in Britain. A typical feature of the soils is the mottled appearance of their B horizon. This is due to the fact that the soils are periodically waterlogged and suffer from lack of oxygen, which changes the form of iron in some parts of soil. Hence the mottled appearance.
- (ii) There are two main types of gley soils: the surface water gley in which, because of their mainly clayey texture and limited large pores, rain and snow melt are held up in the upper layers of the soil causing waterlogging.
- (iii) The other main type of gley soil is the ground water gley. These are poorly drained soils like the surface water gley soils above but differ from them in that the wetness is due to a high water table, which rises to near the soil surface in the winter time. This causes waterlogging and a lack of aeration. These soils occur on the floodplains of rivers.



A gley soil is one that is periodically waterlogged during the year, mainly in winter and spring when there is the wettest weather, and this sets up chemical processes which give the soils a mottled appearance. Both types of soil can be productive agricultural soils but they need to be drained artificially to remove surplus water.

Podzols

- (i) The word is of Russian origin and is used to describe the whitish upper layer in the soils from which soil constituents have been leached and redeposited further down in the soil. This soil type is typical of those formed in the colder, northerly regions that stretch from northern Britain across Scandinavia to Russia.
- (ii) The soils are among the most acid soils in Britain. They are strongly leached soils and devoid of many nutrients particularly in the upper layers of the soil. Their B horizons have layers of humus, iron and sometimes aluminium washed down from the upper parts of the soils.
- (iii) In Britain there are two main types: (a) the humus-iron podzol typical of the more lowland heaths and coniferous forests and (b) the peaty gleyed podzol with a thick topsoil of peat, which is typical of many upland areas of Britain.



(Like the brown earths the podzols occur in a zone across North America and Europe. They are more acid and impoverished than most brown soils and low in nutrients. When next you are in a coniferous forest or on a heathland, look to see if you can find these soils).



Organic Soils

- (i) These are unique soils in that most of the soil profile is composed of organic matter rather than mineral matter and have been formed from the breakdown of plants rather than rocks.
- (ii) There are two main types in Britain which are put to very different uses. The lowland Fen soils are extremely fertile and are much sought after for agricultural and horticultural purposes.
- (iii) The other main type is the upland organic soils which have formed as a result of waterlogging under the high rainfall climate. They are generally acid soils and this combined with the wet upland climates means that they are not used for growing crops. Heather, sedges and mosses are the main vegetation.

When next you are walking in the uplands, like those in Wales and Scotland, you should have no difficulty in finding the peaty soils.



Other Soils of Britain

- (i) There are several other main soil types in Britain. These include the salt marsh soils and the dune soils that are formed around our coastal edge. These tend to be immature soils because they are changing regularly as the tide comes in or the wind blows the sands from around the sand dunes.
- (ii) Shallow soils are a feature of steep slopes that we find on our hill and valley sides. In this position there is constant, usually gradual, movement of materials downslope so the soils are usually shallow, with just topsoil lying on rock. The two main examples are the rendzina on chalk or limestone and the ranker on more acid rocks like those in Wales and Scotland.
- (iii) The remaining two soils we need to know about in this summary of the soils of Britain are the pelosols and manmade soils. Pelosols are heavy clay soil formed on clay sediments which allow rather better drainage than that in gley soils. Humans have had a strong influence on some soils through their industrial and agricultural uses and in a few instances have strongly modified the original natural soils as to require to be classified separately.



(When next you go to the seaside look out for dune soils and even salt marsh soils. Be careful with the latter though because the tide comes rapidly in.)

