

**Describe and explain the characteristics of any one soil types studied by you**

**(80 marks)**

**Marking Scheme:**

Number of aspects discussed:	3 @ 20 marks each	4 @ 15 marks each
<u>For each aspect:</u>		
Identifying aspect	4 marks	3 marks
Discussion	8 x SRPs	6 x SRPs

Overall Coherence 20 marks graded\* 20 marks graded\*

*In this answer, I choose 3 aspects to discuss (Colour, Texture and Humus content). Overall coherence means how well your answer is structured (Introduction, main section, conclusion – well-structured and coherent) and do you keep to the point/ answer the question directly.*

Introduction:

In this answer I will discuss the characteristics of the Brown Earth soil. Brown Earth soils, which is classified as a zonal soil, developed as a result of the Cool Temperate Oceanic climate such as the one found in Ireland. This is found between 30° and 55° North of the Equator. Brown Earth soils are the most common soil type found in Ireland.

Body of Topic:

Brown Earth soils have a number of characteristics that make them different from other soil types. The characteristics of Brown Earth Soil (B.E.S.) include colour, texture, structure, pH, organic matter, water content and colour. All soils are made of a combination of air, water, mineral matter and organic content, which are all affected by their immediate environment as well as the processes operating in that environment (eg. Humification).

As the name suggests, Brown Earth soils are brown in colour. Humification is responsible for the dark colour of the Brown Earth soils. Throughout Ireland, over the last 10,000 years, our deciduous forest have led to an abundance of vegetation (leaf litter) gathering on the forest floors. When this vegetation, combined with other organic matter which would be present, such as dead insects etc. gather on the surface of the soil, it is broken down and decomposed to form a substance called humus. This activity takes place in the upper most 'O Horizon'. Rainfall acts as an agent of 'translocation' as the humus is washed down into the soil by the rain. Humus then acts as a fertiliser to the soil, making it very fertile for further growth the following Spring. Earthworms and insects mix the soil together creating no distinct separation between the A and B horizons.

Texture refers to the coarseness or fineness of the particles found in the soil. Brown Earth soils have equal amounts of silt, sand and clay particles giving them a loamy texture. As there is space between the soil particles for air and water to pass through it, this means that Brown Earth soils are well drained making them very fertile and ideal for agricultural

purposes. When particles of soil bind together they form 'peds'. There are four main groups of 'peds', (crumb, platy, blocky and prismatic) and Brown Earth soils have a crumb structure. This means that the particles of soil are small, rounded and loosely packed together. This allows the air and water to pass through easily, aiding seed germination. Also due to the limited leaching from the climate, hard pans do not develop so tend to be free-draining. Hardpans, or Soil pans, are a dense layer of soil, usually found below the uppermost topsoil layer. The general characteristic is that it is a distinct soil layer that is largely impervious (impermeable) to water. This is the case particularly in North County Dublin where market gardening takes place. In Ireland the parent material for Brown Earth soils is, in most cases, boulder clay, which was deposited during the last ice age.

Humus is formed by the process of humification. Humus is a dark jelly like substance which forms from the decomposition of organic matter, usually by bacteria/fungi, on the forest floor. The humus content of Brown Earth Soil impacts on the structure of a soil, which describes how the particles of a soil are bound together. This binding is aided by the presence of humus. Due to Ireland's Cool Temperate Oceanic climate, this zonal soil has been allowed to form over time. There are variations within Ireland also, where micro-climates of certain areas lead to slightly more leaching for example, and less humus. In the mountainous north-west of Ireland, Podzolic Brown Earth soils contain less humus. Usually, moderate levels of rainfall wash the nutrients into the soil but do not leach it. In this process, water acts as an agent of translocation. This means that water is simply moving the nutrients from the O horizon into the A horizon. Climate and relief dictate the amount of humus in a soil.

### Conclusion:

Therefore, as has been shown, the most common soil type in Ireland is Brown Earth Soil, whose characteristics have evolved over time due to a variety of locational factors to give this zonal soil (a major soil group well-developed from the parent material by the normal soil-forming action of climate and living organisms, generally covering a wide geographic region or zone).