How important is soil? – I

Soil is the thin layer of weathered rock particles and living and decayed organic matter that covers the surface of the Earth. It is in which plant roots anchor themselves, giving the plant stability, and providing water and nutrients. The decision of what are the best plants to grow in a certain area is usually determined by the available soil.

In the world, there are six different soil types that exist. They are classified by the type of rock and size of the particles they contain. This affects how much air and water the soil can hold and how acidic or alkaline it is. The nutritional quality of the soil depends on how much organic matter is blended with the rock particles.

Soil types	
clay	from sedimentary rocks
sandy	from limestone, granite, quartz, shale
silty	contains quartz
loamy	mixture of sand, silt and clay
peaty	mostly organic matter, acidic
chalky	low quality/often infertile

A type of plant may be able to grow in all soils but will most likely grow best in one or two types of soil. Farmers and gardeners need to know which plants grow best in which soils. The nutritional quality of a soil can be improved by adding fertiliser.

When fertiliser is added to a soil, it can cause plants to grow very well. But when it rains, a nitrogen-rich fertiliser can leach into waterways and create an algal bloom (which destroys other water life).

When large plants with deep roots (such as trees) are cut down to make way for cultivating shallow-rooted plants, increased salinity can occur.

Deep-rooted plants take up large amounts of groundwater and lose it to the atmosphere through evaporation and transpiration. This keeps the watertable low. Shallow-rooted, cultivated plants require far less water than trees, so the watertable rises. This would not be a problem if there was no salt in the soil.

When the watertable rises, it dissolves the naturally-occurring salt in the ground, which then attacks plants in two ways. Firstly, it is more difficult for roots to take up water that contains salt, so the plant dies through lack of water. Secondly, the salt contained in the water the roots do take up remains in the plant, destroying the structure of its cells and causing the plant to die.

Plants that grow in estuaries are more tolerant of the salt levels in sea water, but salinity from rising watertable levels (known as 'dryland salinity') can occur far from the sea where there are few, if any, salt-tolerant plants.

Increasing salinity is a worldwide environmental problem. A rising watertable transports more salt to the surface, making the soil less able to support life. The salt can be seen as white deposits on the surface of the ground.