

**GUIDANCE IAS**

more than a coaching...

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sticky structureless clay. It is also characterised by a bluish-grey or bleached look. The gley horizon normally occurs within the zone of permanent groundwater saturation. Above this, where the soil periodically dries out, the ferrous solutes may be oxidised to form ferric iron. Since this process is not uniform, it gives the soil a mottled or blotchy look, typified by patchy red colours.

#### **Desilication**

Under the sustained warm conditions of the humid tropics, silica is more mobile than iron and aluminium oxides, and is progressively removed from the soil along with many of the bases. This process contrasts with podzolisation (above), in which the iron and aluminium oxides are the more mobile. Desilicified soils are appropriately enough known as ferralsols (Fe + Al). Such soils often also have a low organic content because of rapid decomposition by micro-organisms. Hard lateritic horizons may form where groundwater movements within the soil concentrate the iron and aluminium oxides into layers near the surface.

#### **Salinization**

In arid or semi-arid environments, where potential evapotranspiration exceeds precipitation, movement of soil solution is likely to be upward, drawn by capillary attraction towards the drying surface. The ineffectiveness of leaching ensures that calcium and other solutes remain in the soil. The concentration of calcium in this way, sometimes in layers, is known as calcification. In grasslands, calcification is enhanced by the fact that grass uses calcium, drawing it up from the lower soil layers and returning it to the soil when the grass dies.

In extreme cases, where evaporation is very intense, calcium or sodium salts may form a whitish crust at the soil surface, harmful to plant growth. Such excessive accumulations are usually the result of the capillary rise of water from a water table that is saline and close to the surface. This process of salinisation or alkalinisation has occurred in some irrigation schemes—for example, in the Punjab.

### **Q2. Write a short note on soil profile in zonal and azonal soils.**

Discussed in the class.

### **Q3. Write a short note on agronomic methods of soil management.**

The major agronomic methods of soil management include-

1. **Mulching:** mulching is the covering of the soil with crop residues such as straw, maize, stalks etc. these cover protects the soil from the rain drop impact and reduces the velocity of run off and wind. It is also useful as an alternative to cover crop in dry areas where a cover crop should complete for moisture with the main crop.
2. **Cover crop:** they are grown as a conservation measure either during off-season or as ground protection under trees. They are grown as winter annuals and, after harvest, are ploughed to form a green manure.
3. **Multiple cropping:** the aim of multiple cropping is to increase the production from the land whilst providing protection of the soil against erosion. It includes:
  - a. **Rotation:** growing different crops consequently in rotation reduces erosion as high rate of soil loss under row crop is counteracted by low rates under other crops.