

PROBLEM SOILS

This means the soil that has agricultural problems due to soil's unsuitable physical and chemical properties. The result of problem soils is that plants are not able to grow and produce yields as normal.

The examples of problem soils are saline soil, acid sulphate soil, sandy soil, organic soil, skeletal soil and shallow soil.

Saline soil

It has a high amount of salt dissolved in solution. If electrical conductivity of soil solution is more than 2 ds/m (decisiemens/ meter) it is considered saline soil. Salt affected areas show a thin film of white salt on surface in dry season. In salinity regions, no plants grow or some salt tolerant plants grow only. In low salinity areas some plants grow but with poor growth.

There are two types of saline soil :

coastal saline soil these are found in coastal areas inundated by sea for example deltaic region of major Indian rivers.

Inland saline soil It results from the decomposition of sedimentary rocks interspersed with salt bearing rocks or from salt brought up by groundwater.

Effects on plants dehydration, crop failure, crop yield reduction and poor quality produce.

Management

for coastal saline soil rehabilitation of mangrove forest, building Dam to block sea water, using water to wash out salts apply soil improving materials such as rice husk, compost, manure.

For inland saline soil organic matter addition, ploughing in green manure and organic fertilizer rice husk, growing salt tolerant plants such as Acacias and Eucalyptus.

Acid sulphate soil

This refers to the soil with very high acidity because it may currently have or used to have Sulphuric Acid which is a consequence of the occurrence of pyrite mineral in the soil profile and the amount of sulphuric acid is large enough to cause the changes of certain soil properties and to affect the growth of plants in their vicinity. PH is below 4.0

Effect of high acidity Acidity affects the availability of various nutrients like nitrogen, Phosphorus, potassium, sulphur, calcium, magnesium. In a strongly acidic soil iron and Aluminium may dissolve in soil solution at level, toxic to many crops as well as microorganism. Water in such areas is

normally astringent thus not suitable for agriculture and consumption. In fishponds, toxicity of hydrogen sulfide gas, carbon dioxide and organic acids.

Distribution parts of Kerala (Kari soils) Tamilnadu (south east coast).

Management The most common method of treatment is to mix an alkaline material into the soil where it can react with acidity and neutralize it. Agricultural lime (powdered calcium carbonate) is the most common neutralizing material in use.

Sodic soils

Formed due to the exchange of cation in the soil solution with those present on Exchange Complex of soil. In India, common in areas with average annual rainfall 55 to 90 cm. They occur in low-lying areas with the lack of drainage where weathering products accumulate during monsoon period.

In arid regions as the soil solution becomes concentrated due to evaporation of water and absorption by plants. The solubility limits of calcium sulphate, calcium carbonate and magnesium carbonate are often exceeded. They are precipitated. Under such conditions up part of original calcium exchangeable calcium and magnesium is replaced by Sodium resulting into sodic soils.

Management. Apply lime or gypsum. Increase organic matter content. Avoid disturbing already productive sodic soil.