

QUESTION:

What are halophyte plant categories and how do they vary in adaptations to saline water conditions?

ANSWER:

Halophytes are plants which tolerate or even demand sodium chloride in the water they absorb from their soil environment. Depending on the habitat conditions in which they developed, halophytes have different strategies to survive in very high salt content soil-water conditions. Depending on their tolerance and demands for sodium salts, plants can be distinguished as obligate and facultative halophytes. Obligatory means that they need some salt, facultative means they can live also under strict freshwater conditions. Further divisions are hydro-halophytes and xero-halophytes. Hydro-halophytes grow in aquatic conditions or on wet soil. Most mangroves and saltmarsh species along coastlines are hydro-halophytes. Xero-halophytes may grow in habitats where the soil is always saline but where the soil may dry out so much periodically as to cause problems with water availability for the plant. Most species in desert areas are xero-halophytes. Many of them are succulent. Still another division is morphologically based. One can distinguish between succulent halophytes with salt bladders on the leaf surface, and those which excrete the salt with evaporation water, where the salt crystals remain visible on the leaf surface. Under lower salinity levels some plants are able to exclude the salt otherwise taken up by the roots. Many plants fall under several of the above listed categories. They all possess genes which allow them to master the respective salinity under which they must function to survive. The overall definition of a halophyte may be any plant which is able to live under elevated salinity in its growth media. The salinity level in which halophytes grow varies from slight to brackish to medium to severe and to ASWAS (above seawater salinity). The genetic and physiological properties which enable them to cope with the salt concentration are presently subject of intense research.