

PLANT RESPONSES TO SALINITY

Summary

Soil salinity, which affects nearly 6% of the world's land area, is one of the major environmental factors that adversely influences plant distribution and crop productivity. Salt affected soils are found mainly in arid and semi arid climates. However, in humid climate the overuse of fertilisers and crop protection chemicals as well as the frequent use of soluble salts to deal with glazed frost on roads and pavements also lead to increased accumulation of ions in soils and plants. Plants vary in their response to soil salinity, some species can tolerate little or no salinity while others tolerate its high levels. Nevertheless, the presence of salt in the soil causes ionic and osmotic stresses, which lead to metabolic imbalances and nutritional deficiency and may also cause

oxidative stress. Soil salinity may damage the plant during vegetation period from seed germination, through growth and development to formation of reproductive organs. The plant response to salinity consists of numerous processes that generally may be divided into those minimizing the entry of salt into the plant and those minimizing the concentration of salt in the cells. Plant adaptations to salinity involve processes in many different parts of the plant and are manifested in a wide range of specialisations at different levels of organisation: from morphology to gene expression. Understanding the tolerance mechanisms is essential for breeding and genetic engineering of plants.