

Chapter 37

Evolutionary Aside 37.1--Evolution of Halophytes

Halophytes, plants that can tolerate salty soils, have a range of mechanisms for surviving in a salty environment. Fossil evidence indicates that some land plants may have tolerated salt as early as 400 MYA. That leads to an intriguing question of how many times halophytes have evolved independently. When a threshold of about 80 mM NaCl is used to define a halophyte, different researchers have identified between 1550 and 2600 halophyte species widely distributed over the plant tree of life. When the threshold is raised to 200 mM NaCl, 350 species remain on the list. A phylogenetic analysis leads to the conclusion that halophytes have multiple, independent origins. Furthermore, it appears to be a multigenic trait. Evolutionary biologists have suggested that reconstructing the evolution of salt tolerance may provide information that is useful to plant breeders.