

Abstract

In these days, genetic modifications of crops are commonly used in the fight against pests and weeds. More and more often there are also efforts to use genetic modifications to increase tolerance to abiotic stresses that affect worldwide yields much more than biotic ones. Manipulation of trehalose metabolism represents one of the frequently studied options of abiotic stress tolerance enhancement. This work summarizes current knowledge on the protective effects of trehalose in cells and describes signaling functions of trehalose and its metabolic intermediate trehalose-6-phosphate in plants. It also describes current achievements in increasing abiotic stress tolerance through genetic modifications of trehalose metabolism together with accompanying problems. Finally, the potential of this method for future exploitation is discussed.