

2212 Transcriptional Responses of Allotetraploid Cotton Species to Salt Stress

Mr. Joshua Udall , Plant and Wildlife Services, Provo, TX

Both species of domesticated cotton (*Gossypium hirsutum* and *G. barbadense*) are related to three other wild allotetraploid cotton species (*G. darwinii*, *G. mustelinum*, *G. tomentosum*). These other species have been used as a germplasm source to improve abiotic stress tolerance in domesticated cotton, but it is not known which genes contribute to abiotic stress tolerance. Representative accessions from the five allotetraploid species of cotton were hydroponically grown and treated with NaCl according to a split-plot design where the sub-plot was a salt (15 dS m^{-1}) vs. no-salt treatment. The salt treatment was added incrementally to acclimate treated plants and avoid induction of 'panic' genes. Treatment contrasts of stomatal conductance data suggested that the plants perceived salt stress. Leaf tissue was collected for RNA extraction and transcriptional responses of genes to salt stress were measured using cotton DNA microarrays. Identification of genes differentially regulated by salt stress in these other species may provide putative gene targets for introgression, biotechnological improvement, and evolutionary studies.