

Introgression Pathway for Drought Tolerance in Peanut (*Arachis hypogaea* L.)

J. M. CASON*, C. E. SIMPSON, J. A. BRADY. Texas A&M AgriLife Research, Texas A&M University System, Stephenville, TX 76401.

A hybrid of the bridge species *Arachis vallsii* (Krapov. and W.C. Greg.) (VSW 9902-1) and *A. dardani* (Krapov. and W.C. Greg.) (GK12946) was created to initiate an introgression pathway for movement of possible drought tolerance into the cultivated peanut (*A. hypogaea* L.). A hybrid between the two species was successfully created and confirmed based on leaf morphology, pollen counts and intermediated leaf morphology. 175 attempts were made to double the chromosome complement using 3 methods at concentrations of .02% and .03% colchicine for exposure times ranging from 6 to 24 hours. No attempt has been successful to date. In addition, a greenhouse transcriptome study with 7 day imposed drought was conducted on *A. dardani* (12946) and the reference species *A. ipaënsis* (Krapov. and W.C. Greg.) (KGBPScS-30076) (B genome donor of the cultivated peanut). Differential gene expression analysis (EdgeR Test) of the normalized RPKM (Reads Per Kilobase Million mapped reads) values was conducted with a fold value \geq abs (2) at the $p \leq .05$ level using CLC Genomics Workbench v8. Statistically significant transcript levels associated with drought tolerance were found in relation to the putative drought tolerant species (*A. dardani* (12946)) which have not been reported previously. Transcripts were identified that were statistically higher between physiological states and between species. In total 40 genes were identified for further study.