

INITIAL CHARACTERIZATION OF A STONEVILLE 474 X PHYTOGEN 72 RECOMBINANT INBRED POPULATION**John J. Burke****Mauricio Ulloa****USDA-ARS Plant Stress and Germplasm Development Unit
Lubbock, TX****Abstract**

This study represents the initial characterization of a F7 recombinant inbred population developed to map quantitative trait loci (QTLs) associated with the inheritance of flower shape (open versus cupped petals), abiotic stress tolerance of mature cotton [*Gossypium hirsutum* (L.)] pollen, and fiber quality. Flower shape was evaluated in the F2 and F7 populations of STV474 by PHY72. The inheritance of the moisture sensitivity of pollen was evaluated in F1 and F2 populations of bi-directional crosses between STV474 and PHY72. On June 6, 2012, STV474 by PHY72 F7 seeds were planted in two-row 15-foot long field plots using an augmented design with FiberMax 9180 as the check. The plants received 5 mm of irrigation per day from planting until 50 days after planting via subsurface drip irrigation, when irrigation was reduced to 3 mm per day. The onset of deficit irrigation responses was evaluated using a laboratory assay based on leaf fluorescence after a brief incubation under high respiratory demand (Burke, J.J. 2007. Plant Physiol 143:108-121. Burke, J.J., C.D. Franks, G. Burow, and Z. Xin. 2010. Agron. J. 102:1118-1122). Plants were mapped for height and first square position 41 and 77 days after planting, and at harvest for plant height, boll positions, boll numbers, lint weight per plant, seed weight per plant, and turnout. The diversity observed within this RIL population suggests its usefulness for future mapping studies. Cotton Incorporated Project #05-703.