

## **1885 Impact of drought and high temperature stresses on cotton fiber development and fiber quality**

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Cotton is the number one cash crop in the Texas High Plains. About 25% US cotton is produced in this region. However, increasingly shortage in water supply for irrigation has made cotton growers to either reduce water usage and/or grow cotton on dry-land conditions. Drought combined with frequent daily high temperatures not only reduces the overall growth of cotton plants, but also greatly decreases cotton yield and fiber quality. To study the effects of these environmental stresses on fiber development, we created transgenic cotton lines with beta-glucuronidase (GUS) reporter gene fused to six different cotton fiber specific (CFS) promoters (representing genes expressed at different stages of fiber development), a CaMV35S promoter, and a promoter-less control via *Agrobacterium* mediated transformation. The impacts of drought, high temperature, a combination of drought and high temperature stresses on the expression of these CFS genes were examined at different days post anthesis by GUS assay and qRT-PCR. The effects of these stresses on lint yield and fiber quality were evaluated in association with gene expression data.