

COTTON VARIETY CHARACTERISTICS AND THEIR IMPACT ON COTTON LEAF GRADE**Z. P. Eder****G. D. Morgan****D. Fromme****D. Mott****Texas Agrilife Extension****College Station, Tx****Fred Bourland****University of Arkansas-NEREC****Keiser, AR****ABSTRACT**

Defoliation of cotton, *Gossypium hisrutum* L., prior to harvest is a critical step in maintaining cotton fiber quality. Minimizing the presence of cotton plant material (leaf, petiole, etc) in the module and ultimately in the lint after ginning is important to the producer and entire cotton industry. Leaf and bract material in ginned cotton is quantified using a leaf grade scale (1 to 7). Leaf grades above 4 result in price dockage to the producer. Over the past 10 years, cotton classed at the Corpus Christi Classing Office has shown a steady increase in cotton leaf grades. Many cotton producers contribute this increase in leaf grade trends to hairier leaf cotton varieties and increased use of desiccation products to defoliate cotton. To address these questions, multiple trials were initiated in 2010 and 2011 in South Texas to determine the impact of cotton variety and defoliation treatments individually, and the interaction between these two factors. In the 2010 defoliation trials, a wide range of crop defoliation levels were obtained from the selected treatments. However, a poor correlation between the defoliation or desiccation level and cotton leaf grade value was observed. In 2010, a significant increase of leaf grade values was observed for the hairy cotton variety, regardless of the level of defoliation. These research trials were repeated in 2011, and analyzed with leaf hairiness quantifications. In 2011, two smooth and two hairy leaf varieties were treated with five defoliation treatments for a range of defoliation and desiccation. In variety trials, six varieties provided a range of hairiness for physiological sampling and leaf grade comparisons. A module sized test was conducted with a smooth and hairy leaf variety, and lint was ginned at a commercial gin. Cotton plant characteristics thought to contribute to leaf grade, including leaf and bract hairiness were collected at cutout in 2011 from all trials. Trichome counts were performed on fully expanded leaves and bracts. All trials were picker harvested, subsamples were ginned through a small scale gin, and lint samples were analyzed to determine cotton leaf grade. Varieties with denser trichomes resulted in higher leaf grades in the variety by harvest-aid and module testing. Physiological traits including leaf area, bract area, and bract length were not different between varieties, and had no correlation with leaf grade. Because of the correlation between trichome density and leaf grade, smoother varieties of cotton would be expected to yield a lower leaf grade. In 2011 trichome counts found that subjective leaf hairiness ratings provided by the companies did not strongly correspond to the field observations of the cotton leaf hairiness collected in these trials. Additionally, an industry-wide standard for leaf hairiness is needed to properly compare varieties.