

STABILITY OF YIELD AND FIBER QUALITY IN THE NORTH DELTA: II. COMPARISON OF VARIETIES**Fred Bourland and Ron McNew****University of Arkansas****Keiser, AR****Bobby Phipps****University of Missouri****Portageville, MO****Chism Craig and Owen Gwathmey****University of Tennessee****Jackson, TN****Abstract**

Use of more stable yield-producing varieties should help to reduce wide fluctuations in lint yield, which may limit profitable cotton production. However, producers seldom have the luxury of examining yield over sufficient number of years to determine which varieties produce the most stable yields. Data for additional test locations from multiple states may help to identify more stable yield-producing varieties. The overall objective of this multi-state project is to establish a method of determining stability of new varieties using fewer years of testing. The specific objective of this paper is to illustrate a comparison of the stability of yield and fiber quality parameters of cotton varieties grown in the north Delta using two years of data. Yield and fiber data for 24 varieties (those common to all sites) were extracted from 2002 and 2003 state cotton variety tests in Arkansas (6 sites), Missouri (5 sites) and Tennessee (4 sites). For each parameter, stability variation (defined as the variance of GxE interaction effects for a variety) of varieties was regressed on variety means. Within resulting graphs, varieties were separated into four sections indicating either high or low values for the parameter and either high or low stability. Except for fiber strength, means and stability of each trait were not significantly related. As strength values increased, stability of strength decreased. The four highest yielding varieties were in the less-than-average stability group. Late maturing varieties tended to fall in groups of relatively low yield and/or low stability while early maturing varieties tended to produce more stable yields, but yield of many of these were relatively low. Compared to early maturing varieties, late maturing varieties tended to have lower micronaire, lower uniformity index, lower elongation and higher strength. These results suggest that increased testing environments within years (i.e., multi-state data) may help to more promptly define stability of cotton varieties. Variety performance with regard to both the stability and optimum values of parameters should be considered.