

STABILITY OF YIELD AND FIBER IN THE TEXAS GERmplasm

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Abstract

Understanding the genotypic by environmental response of germplasm and cultivars has always been a goal of the cotton breeder. The objective of this study was to determine the stability of the Texas germplasm pool using data collected from the 2001 and 2002 Texas Preliminary Variety Trials. Five Texas germplasm lines, TAM 96 WD-18, TAM 96 WD-22, TAM 96 WD-69s, TAM 96 WD-72, and TAM 96 WD-81, along with three commercial cultivars, Stoneville (STV) 474, Fibermax (FM) 832, and TAMCOT Sphinx, were evaluated in CS, CC, W, U, T, and D, TX. TAM 96 WD-18 and TAM 96 WD-22 are full sibs while TAM 96 WD-69s, TAM 96 WD-72 and TAM 96 WD-81 are full sibs. All TAM 96 WD genotypes are half sibs. Trials were planted in a randomized complete block design with three replications in 2001 and four replications in 2002. Yield and HVI data were combined over both years and analyzed using the Additive Main effects and Multiplicative Interaction (AMMI) procedures in SAS. Lines showing stability for lint yield were TAM 96 WD-81, TAM 96-WD69s, and STV 474. The highest yielding line across all locations was TAM 96 WD-22 (908 lbs/A), however it was the least stable among these genotypes and environments. Lines showing stability for lint percentage were TAM 96 WD-18 and FM 832; for micronaire were TAM 96 WD-69s, TAM 96 WD-72, and TAM 96 WD-81; for length were TAM 96 WD-18, TAM 96 WD-22, and TAMCOT Sphinx; for strength were TAM 96 WD-18, TAM 96 WD-22 and STV 474. Only STV 474 showed stability for elongation, and TAM 96 WD-69s showed stability for length uniformity. Although the TAM 96 WD genotypes are half sibs, there was a difference in the genotype by environmental response for each characteristic measured. The only full sib group to show similar responses was the TAM 96 WD-69s, TAM 96 WD-72, and TAM 96 WD-81 group, and this was for only one characteristic, uniformity.