

**GENOTYPE-RELATED DIFFERENCES IN LENGTH
UNIFORMITY, MATURITY UNIFORMITY AND PERIMETER**

Gayle Davidonis

USDA-ARS

Southern Regional Research Center

New Orleans, LA

W. David Caldwell

Louisiana State University

Bossier City, LA

Donald Boquet

Louisiana State University

Winnsboro, LA

Abstract

Environmentally induced variation in fiber properties presents breeders with a challenge. The objective of this survey of cotton cultivars grown in a historically high micronaire area was to assess fiber property uniformity across genotypes and environments. Nine cottons that were part of the 2002 LSU Cotton Variety Trials in Winnsboro, LA, were grown under rainfed and irrigated conditions. Fifty boll samples were handpicked and fiber was ginned on a laboratory gin (no lint cleaners). Fiber was analyzed on HV1 and AFIS (v2) instruments. Yields were similar but irrigated cotton plants exhibited rank growth. Cultivars with the longest UHM length had the smallest perimeters. For some cottons a high length Uniformity Index (UI) was not accompanied by a low coefficient of variation for mean length [L(w) CV] or low short fiber content (SFC). Under rainfed conditions five of the nine cottons had micronaire values above 4.90 while under irrigated conditions no cottons had micronaire values above 4.90. Theta a measurement of fiber circularity is also a measure of fiber maturity. Theta CV was lower for ST 5599 B/R, ST 580, ST 457 and DP 444 B/R than for DP 491, TX 295, FM 966, DP 493 and DP 555 B/R under both rainfed and irrigated conditions. With the introduction of lower micronaire cottons a fiber package with high uniformity values suitable for high micronaire areas is within reach.