

[Home](#) » [Volume 7 / 2003](#) » [Issue 4](#) »

Sources of Fiber Strength in the U.S. Upland Cotton Crop from 1980 to 2000

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Pages: 164-169

Breeding and Genetics[Full Text PDF](#) (63K)

The U.S. cotton (*Gossypium hirsutum* L.) crop had shown remarkable improvements in fiber strength until the late 1990s. At the same time, concerns about the lack of genetic diversity had been raised. The objective of this study was to discern the sources of improved fiber strength and decline during the 1980s and 1990s. Using data from the USDA-Agricultural Marketing Service on area planted to commercial cultivars, pedigree information, and fiber data from the USDA-ARS Regional Cotton Variety Testing Program, the most popular cultivars, their pedigrees, and their fiber strength were discerned. The source of fiber strength genes was determined by examining pedigrees. The Acalas, particularly from New Mexico State University, accounted for half of the fiber strength improvements during this period. Transgressive segregation accounted for 25% of the improvements, while the USDA-ARS Pee Dee Program supplied 12.5% of the high fiber strength genes. The decline in fiber strength improvement from 1995 to 2000 was the result of backcrossing to existing cultivars to produce transgenic cultivars, which accounted for the bulk of the hectareage in the latter part of the 1990s.