

**FIBER AND YIELD COMPONENT
DISTRIBUTION IN THE BC₃F₁
GENERATION OF A *GOSSYPIUM
HIRSUTUM* X *GOSSYPIUM BARBADENSE* CROSS**

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Abstract

Breeders have tried for many years to introgress the fiber quality of extra long staple cotton, *Gossypium barbadense*, into the upland cotton, *G. hirsutum*, through conventional plant breeding techniques. These efforts have been marginally successful. A blind, i.e. always using the F₁ as the recurring parent, backcross was established in 1991 by crossing Tamcot 2111 and Pima S-6. The underlying assumption of using a "blind" backcross was that if enough recombinant lines were developed then a large percentage of the Pima genome would be represented across those lines. This result would allow the use of molecular biological techniques to identify genes for improved fiber quality in any individual lines exhibiting fiber parameters exceeding the upland parent. The original cross was made in 1991 and the subsequent back crosses made to Tamcot 2111 during 1992-1994. Fiber quality parameters and related yield components of twenty- four recombinant BC₃F₁ lines were compared with Tamcot 2111 during 1995 at the Texas Agriculture Experiment Station, College Station, TX. Statistical design was a one-way analysis of variance with sampling. Nine to thirty individual plants within lines were individually harvested and considered samples for statistical purposes. Individual bolls from each plant were hand harvested and ginned on a laboratory gin with HVI fiber properties determined at the International Center for Textile Research and Development at Lubbock, TX. Fiber properties evaluated include micronaire, length, strength, UI, elongation, lint percent, and boll weight. Variation was observed among all traits. Eight BC₃F₁ lines were identified having fiber bundle strengths significantly higher than the recurring Tamcot 2111 parent. Fiber bundle strength ranged from 34.5 - 38.1 among these eight recombinant lines compared with 32.6 g/tex for the recurrent parent.