

**TOP CROSS ASSESSMENT OF COMBINING ABILITY FOR EXTRA LONG STAPLE TRAIT IN
UPLAND COTTON**

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Abstract

Improvements in spinning technology and competition from man-made fibers require that plant breeders continue to improve the length and strength of upland cotton, *Gossypium hirsutum* L., fibers. Such improvements in fiber quality could provide for greater flexibility in end products and maintain the global competitiveness of U.S. cotton. TAM B182-33 ELS (Extra Long Staple) germplasm line of upland cotton, and Tamcot CAMD-E, a short staple obsolete cultivar were crossed with 36 cultivars representing unique germplasm pools from China (12 cultivars), north Africa (9 cultivars), south Africa (8 cultivars), and seven cultivars representing distinct germplasm pools within the United States. Parents and F1s were grown in the Cotton Winter Nursery in a randomized complete block design during the winter 2009/10. Seedcotton was harvested by hand, returned to College Station, TX, ginned on a laboratory gin, and fiber properties determined by the Fiber and Biopolymer Research Institute. Cultivars from north and south Africa exhibited HVI lengths ranging from 28.7 to 33.2 mm and 28.4 to 32.8 mm, respectively. The north Africa cultivars combined with Tamcot CAMD-E to produce F1s with lengths ranging from 27.1 to 32.3 mm while the south Africa cultivars combined with Tamcot CAMD-E to produce F1 lengths of 29.5 to 33.0 mm. The longest F1, TAM B182-33 ELS / Del Cerro, was 36.6 mm.