

BREEDING NATURALLY PIGMENTED COTTON WITH HIGH FIBER QUALITY

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Abstract

A number of cotton strains which produce naturally pigmented (colored) fiber have been selected from segregating progeny of interspecific Acala (*Gossypium hirsutum* L. cv. "DPL 90") and Pima (*Gossypium barbadense* cv. 'Pima S-6'). Pigmented fiber variants appear to have arisen spontaneously in the advanced generation progeny, as did many other mutant fiber types and other morphological characteristics. Two characteristics that distinguish these naturally pigmented strains are excellent heat tolerance and plant vigor, as evidenced by lint production data and boll size. These high quality fiber characteristics and consistent fiber colors have been relatively stable over several successive generations, as shown.

All fiber colors and fiber mutants have been advanced for at least three generations from pigmented fiber parents which exhibited fiber length of at least 25 mm and fiber strength of at least 25 grams per tex. Mean fiber length averaged about 29 mm; and mean fiber strength averaged about 29 grams per tex across all parents; several of the mutants exhibited cream or off-white fiber and the fiber was exceptionally strong at over 40 grams per tex. Micronaire varied widely across breeding lines, locations and years of production; with a normal range between 3.0 and 5.5; with green fibers usually the finest (lowest micronaire). Four types of germplasms are illustrated and discussed: one with cinnamon colored fiber presenting as rusty brownish colored bolls; one with champagne colored fiber (pinkish hued bolls); one with emerald green colored fiber with brownish undertones; and one extremely strong with off-white or cream fiber. Results of spinning tests and examples of extensive fiber analyses and thread and cloth samples are presented.