

VARIABILITY IN FIBER QUALITY

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Abstract

The textile industry desires longer and more uniform fibers. Fiber quality variability at the bale level is a composite of variability from the seed, boll and plant levels. Fiber quality variation was manifest at the seed level since fiber length of chalazal fibers was longer than micropylar fibers. Mean maturity was greater in the micropylar fibers. At the boll level the degree of seed setting efficiency and the number of developmentally arrested seeds contributed to fiber quality variability. At the plant level fiber properties differed among bolls at different canopy positions with the most desirable qualities associated with mid-canopy bolls. Changes in plant population and planting date altered boll distribution and influenced fiber properties at specific canopy positions. The genetic potential of a cultivar sets the maximum values for fiber properties while the environment regulates the potential. Therefore the selection of a cultivar with narrow ranges for fiber properties should contribute to more fiber uniformity. The interaction of fiber properties complicates the analysis of variability since long immature fibers can break more frequently and contribute to greater length variability.