GENETIC VARIATION IN SEED SIZE AND FUZZ CONTENT IN COMMERCIAL CULTIVARS AND BREEDING LINES OF UPLAND COTTON

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Abstract

Seed size is an important physical trait affecting seed quality which in turn affects seed germination and seedling vigor. In cotton, seed size is often measured by seed index (i.e., 100 fuzzy seed weight in grams), and it is known that seed index varies among cotton genotypes. Seed size too large may negatively affect cotton yield; however, seed size too small may reduce seed germination and seedling establishment. In cotton, seed fuzz is short fibers (<0.5 cm) that cannot be separated from the seed by ginning, and its effects on cotton yield and fiber quality is currently not fully understood. In this study, 58 Upland commercial cultivars and advanced breeding lines and five Pima cotton cultivars were divided into two replicated field tests each with 32 genotypes arranged in a randomized completed block design with four replications. Seeds were sown on June 2, 2020, followed by furrow irrigation for seed germination and seedling emergence. During the growing season, furrow irrigations were arranged every 3-4 weeks until late September. Before mechanical harvest in early December, 40 open bolls were hand harvested for ginning to determine boll weight, lint weight, seed weight, and lint percentage. Subsequently, a total of 100 fuzzy seed from each plot were counted and weighed, followed by acid-delinting and weighing. Acid-delinted seed weight for each sample was recorded to calculate fuzz weight calculated by subtracting the acid-delinted seed weight from the fuzzy seed weight. Analysis of variance was conducted, and the results showed that genotypic variation in fuzzy seed index, acid-delinted seed index and fuzz content was significant. The results will be used to associate these traits with yield and fiber quality traits.