

Detection of Genetic Diversity In Egyptian Cotton (*Gossypium barbadense* L.) Varieties Using RAPD Markers and Morphological Traits

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ABSTRACT: Two marker systems, 19 RAPD and 8 agronomic traits were used to estimate the genetic diversity in Egyptian cotton. RAPD primers produced a total of 101 amplicons, which generated 86.25% polymorphism. Number of amplification products ranged from 2 to 7 where percent genetic similarity for the studied primers ranged from 72.2% to 89.9% with an average 81.4%. PIC values of the RAPD markers ranged from 0.855 (UBC 20) to 0.909 (UBC 54) with an average of 0.896 per marker. Highly significant differences were obtained between genotypes for all traits except boll weight, lint percentage and fiber strength. PCV were higher than its corresponding GCV for number of open bolls per plant, boll weight, seed cotton and lint yields per plant. However, no great difference between PCV and GCV for the three fiber characters. Broadsense heritability estimates were ranged from 17.18% to 90.97% for boll weight and fibre strength, respectively. High genetic advance under selection was noted for lint cotton yield per plant, seed cotton yield per plant, number of open bolls per plant, fiber strength, fiber length and micronair value. However, low genetic gain obtained for boll weight and lint percentage. Number of bolls per plant showed high positive phenotypic correlation coefficients with both seed cotton and lint yields per plant. This study of the genetic diversity of Egyptian cotton varieties with RAPD markers and agronomic traits support the need to introduce new alleles into the gene pool of the Egyptian cotton breeding program.

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