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DEVELOPMENT, AGRONOMIC AND MORPHOLOGICAL CHARACTERIZATION OF A LARGE EMS MUTANT POPULATION IN COTTON *GOSYPIUM HERBACEUM* CV. VAGAD

TILLING (Targeting Induced Local Lesions IN Genomes) is a mutagen-based, non-transgenic, effective, reverse genetic technology, which is utilized for functional genomics studies. *Gossypium herbaceum* ($2n=2x=26$) withstand drought, thus its maximum cultivation occurs in the rain-fed regions of Asia. The cotton genome(s) and transcriptome(s) sequencing studies of *Gossypium* spp. provide information for candidate genes that determine different traits. Mutagenesis generated several new alleles of the interesting gene(s). They need functional validation before being used in breeding. In current EMS mutagenized TILLING population of *G. herbaceum* (cv. VAGAD), 70 mM EMS was used and we developed 5,473 M3 plants. The morphological data for 11 agronomical traits were recorded for 4,453 matured M3 plants. The range of dispersion, mean performance and coefficient of variation (CV), was more variable in the mutants as compared to control plants. The phenotyping of M3 population showed 31.63% plants having some variation as compared to the control untreated plants. The visual inspection of plant morphology showed that 2.29% of plants have visible changes in leaf morphology, leaf colour, sterility, and plant habits. This mutant population provides the opportunity for functional genomics studies of cotton that might potentially be useful in breeding.

Country or International Organization

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