

Genetic diversity in eggplant (*Solanum melongena* L.) germplasm from three secondary geographical origins of diversity using SSR markers

ABSTRACT

Indo-Burmese region was the primary center of eggplant diversity from where the crop extended to several secondary origins of diversity. In this study, the genetic diversity among fifty-six eggplant accessions collected from three countries was assessed using sixteen polymorphic SSR markers to determine suitable parents for heterotic hybridization. The estimation of genetic diversity among the population of three countries (Bangladesh, Malaysia, and Thailand) varied from 0.57 to 0.74, with Shannon's index value of 0.65. The mean value of expected heterozygosity and Nei's index was 0.49, with an average PIC value of 0.83. A dendrogram was constructed based on UPGMA (unweighted pair group method with arithmetic mean), and the dendrogram categorized all accessions into six groups. The AMOVA (analysis of molecular variance) revealed a 77% total variation within the population from three different countries and 23% total variation among the populations. The result revealed a high genetic differentiation among the eggplant germplasms while the accessions that are farther from each other show a high level of diversity; thus, they can be recommended as parental in breeding programs. Hence, accessions, EB12, ET11, ET13, ET15, ET16, and ET17 could be crossed with accessions EM3, EB34, and EB3 for improvement in the future breeding program.

Keyword: *Solanum melongena*; Molecular diversity; Genomic-SSR; EST-SSR