Genetic divergence studies for fibre yield and quality traits in roselle (*Hibiscus sabdariffa* L.)

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ABSTRACT

A field experiment was conducted with 67 genotypes of roselle at Agricultural Research Station, Amadalavalasa, Srikakulam district during *kharif* (2025) to assess the genetic divergence for eleven fibre yield and fibre quality traits. All the genotypes were grouped into five clusters based on Mahalanobis D^2 analysis using Tocher's method. Cluster I comprised of 46 genotypes followed by Cluster III with 10 genotypes, Cluster II with 8 genotypes, Cluster IV with 2 genotypes and Cluster V with a solitary genotype. The maximum inter-cluster distance was observed between clusters III and IV followed by clusters IV and V, indicating wider genetic diversity among these clusters. Cluster V recorded high mean values for green weight, fibre stick ratio, tenacity and fibre yield, whereas Cluster IV recorded highest mean value for plant height. Cluster II showed superiority for basal diameter and stick yield, while Cluster I recorded higher mean performance for fibre fineness. Among the eleven characters studied, days to 50 per cent flowering contributed maximum towards genetic divergence followed by defects, root content and tenacity. Based on cluster mean performance, AMV-10 (Cluster V) and genotypes HS-7910 and RIN-304 (Cluster IV) were identified as promising parents for fibre yield and fibre quality improvement. Hybridization between superior genotypes belonging to Clusters III and IV may be useful for generating wider variability and exploiting heterosis in roselle breeding programmes.

Key Words: *Genetic divergence, Mahalanobis' D^2 analysis, Roselle and Tocher's method*