

Genetic diversity and association studies in cotton

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ABSTRACT

One ninety-six (including four checks) of upland cotton genotypes (*Gossypium hirsutum* L.) were evaluated for genetic variability and divergence for seed cotton yield and its attributing traits at Regional Agricultural Research Station, ANGRAU, Lam, Guntur during *kharif*, 2024. The analysis of variance indicated significant genetic variability among the germplasm lines. Genetic parameters such as genotypic and phenotypic coefficients of variation (GCV and PCV), heritability and genetic advance were calculated to understand the nature of trait inheritance and potential for improvement. Traits such as number of bolls per plant, number of sympodia, lint yield, and seed cotton yield showed high heritability coupled with high genetic advance, indicating predominant additive gene action. This implies that these traits can be effectively improved through simple selection. In contrast, traits like boll weight and uniformity ratio had lower GCV, PCV, and genetic advance, indicating a greater environmental influence or non-additive genetic control.

Keywords: *Cotton, Genetic advance, Heritability and Variability*