Genetic divergence studies in upland cotton (*Gossypium hirsutum* L.) germplasm

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ABSTRACT

The present study was conducted at Agricultural College, Bapatla, Andhra Pradesh, India. 60 cotton genotypes were evaluated for fifteen parameters *viz*., days to 50 % flowering, plant height (cm), No.of monopodia per plant, No.of sympodia per plant, No.of bolls per plant, boll weight (g), Seed index (g), lint index (g), ginning out turn (%), 2.5 % span length (mm), bundle strength (g/tex), fibre elongation (%), uniformity ratio, micronaire (10^{-6} g inch $^{-1}$) and seed cotton yield per plant (g). Analysis of variance showed significant differences among the 60 genotypes for all the fifteen characters showing the presence of genetic variability among the materials studied. Based on Mahalanobis' D^2 statistic, eight clusters were formed and maximum contribution towards genetic divergence was made by uniformity ratio, lint index, boll weight, monopodia per plant, micronaire, bundle strength, 2.5% span length, bolls per plant, days to 50% flowering, fibre elongation, seed index and plant height. Principal component analysis identified six principal components (PCs) which contributed 79.79 % of cumulative variance. The factors, ginning outturn, sympodia per plant, plant height, monopodia per plant, days to 50% flowering, seed cotton yield, fibre elongation, micronaire, seed index, boll weight, bundle strength, bolls per plant, uniformity ratio and lint index contributed positively to the first principal component.

Keywords: *Cotton, Clustering, D^2 analysis, Genetic divergence and Principal component analysis.*