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## Enhancing the breeding value of genotypes through genetic selection in cotton (*Gossypium hirsutum* L.)

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**Abstract:** Selection for improvement of desirable traits will be successful only when it is performed based on reliable genetic parameters. An experiment was conducted by segregating populations of eight intra-*hirsutum* hybrid combinations. Genetic parameters including mean, range, phenotypic coefficient of variation (PCV), genotypic coefficient of variation (GCV), heritability, genetic advance (GA), GA as percentage of mean, skewness and kurtosis in F<sub>2</sub> generation and heritability parameter in F<sub>3</sub> generation of eight intra-*hirsutum* hybrids were assessed for yield components. To assess the breeding value of genotypes selected based on genetic parameters; their progenies were evaluated in the F<sub>3</sub> generation. The study revealed that F<sub>2</sub> generation of the cross combination TCH 1628 × Gh 493 exhibited the highest mean, GCV, PCV, heritability, GA, GA as percentage of mean and negative kurtosis for seed cotton yield. The F<sub>2</sub> population of the crosses such as MCU 12 × Gh 488 (ginning outturn) TCH 1452 × MCU 5 (boll weight) and TCH 1628 × Gh 493 (boll number and plant height) and SVPR 2 × Gh 488 (sympodial number) were exhibited excellent variability for the respective traits. F<sub>3</sub> progenies raised out of selected single plants recorded more than 98% of heritability for traits viz., seed cotton yield and ginning outturn. Remarkably higher expression of these heritability values in F<sub>3</sub> progenies than their respective F<sub>2</sub>'s indicated the stable inheritance and improved breeding value of selected individuals under genetic parameters based selection. Hence, genetic selection implies its worthiness through an expression of high mean values for different biometrical, important fiber quality and seed cotton yield traits in 21 elite F<sub>3</sub> progenies selected.

**Keywords:** *G. hirsutum*, genetic parameters, F<sub>2</sub> and F<sub>3</sub> generation, breeding value, yield components

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