



## Genetics of quantitative and qualitative traits of isabgol (*Plantago ovata*)

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**ABSTRACT.** Isabgol is a medicinal plant known for its high-quality dietary fiber. The genetics and inheritance of economic characters, such as number of panicles, panicle length, seed yield, and swelling factor, were measured by diallel analysis of  $F_1$  progenies from seven parents. The additive component of genetic variance was significant for days to flowering, plant height, branches/plant, peduncle length, panicle length, days to maturity, and swelling factor, whereas the dominance component of genetic variance was significant for all the characters except panicles/plant. Additivity was not significant for all the characters, indicating absence of non-allelic interactions (epistasis) in controlling gene expression. Heritability in the narrow sense was very high for panicle length, days to flowering, and plant height, and moderate for branches/plant, panicles/plant, days to maturity, seed yield, husk yield, and swelling factor. However, the degree of genetic improvement was only high for panicle length, seed yield and husk yield. We conclude that hybridizations, isolation

of superior genotypes by sib selection and recurrent selection, and exploitation of hybrid vigor in specific parental-cross combinations are good strategies for isabgol crop improvement.

**Key words:** Allelic interactions; Diallel analysis; Epistasis; Genetic improvement; Heterozygosity; Over-dominance