



# Study of Genetic Variability, Heritability, and Genetic Advance in Linseed (*Linum usitatissimum* L.)

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## ABSTRACT

The 55 linseed (*Linum usitatissimum* L.) accessions comprising the local and released cultivars, advanced breeding lines were assessed to investigate the magnitude of genetic variability. Measurements were taken for nine quantitative traits, such as days to 50% flowering, days to maturity, plant height (cm), no. of branches/plant, no. of primary branches/plant, no. of capsules/plant, no. of seeds/capsule, 1000-seed weight (g), single plant yield (g). The use of the analysis of variance in this study demonstrated substantial divergence among the selected genotypes across all the nine parameters. Further, the chosen genotypes with respect to all the observed traits showed an extent range of variation that offers greater opportunities concerning selection of desirable characters. Greater values of phenotypic coefficient of variation and genotypic coefficient of variation were found for seed yield/plant and no. of capsules/plant. The degree of differences in between PCV and GCV is found to be lesser for overall traits denoting lower degree of environmental impact. Maximum heritability together with high genetic advance for no. of seeds/capsule, no. of capsules/plant and seed yield/plant suggested predominance of additive gene action. While high heritability coupled with moderate-low genetic advance was noted for further parameters proposing non-additive gene action.

**Keywords:** Genetic variability, Genetic advance, GCV, Heritability, PCV, Linseed

Linseed (*Linum usitatissimum* L.) commonly known as flax is a multipurpose *rabi* oilseed crop. It is the only species in Linaceae of which each part can be utilized either directly or after processing. At a time it serves as food (dietary fibres, micronutrients, and omega-3 fatty acids), feed (oil cakes), pharmaceutical industries (antioxidant, phytoestrogen, and anti-cancerous) (Toure and Xueming, 2010), fibre (flax and linen), and oil (paint, lubricant, and varnish) manufacturing (Payne, 2000). Multifunctional Linseed has occupied a firm position in the Indian economy. However, as per the Food and Agriculture Organization (FAOSTAT) report of 2018, India's average productivity is far behind than other countries. Therefore, there is a serious

need to increase the genetic seed yield potential of Linseed. Selection is a pivotal tool through which the genetic potentialities of any crop can be improved. The pattern of variability and heritability is one of the most important selection parameters as the achievement of the breeding scheme depend upon the existence of genetic variability in the breeding stock. Heritability alone is not enough for making an efficient selection in advanced generations until and unless it is accompanied by substantial amount of

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