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Genetic Variability and Character Associated Studies in *Pisum sativum* L.

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Abstract

Peas (*Pisum sativum* L.) are the second most significant crop in leguminous family. It is consumed as green and dry peas in various regions around the globe. Due to changes in climatic conditions yield of pea varieties has decreased in previous years. So, it is necessary to evaluate genetic diversity present in existing pea accessions and to search for various pea genotypes having the potential to flourish in such changing climatic conditions. For this reason, twenty pea genotypes were field-tested using RCBD during 2022-23. After the vegetative stage, data was collected for nine morphological traits. Genotypic variance, phenotypic variance and principal component analysis were used to evaluate the variability among the genotypes. Significant variation among the studied accessions were shown by ANOVA. Most of the traits exhibited high heritability coupled with high genetic advance, indicating that these traits were governed by additive gene action. Hence hybridization and selection would be fruitful for these traits. Whereas pod width showed low values of heritability and genetic advance. For all the studied traits magnitude of phenotypic coefficient of variance was greater than genotypic coefficient of variance, which revealed that these traits had additive environmental effect. According to correlation analysis, plant height, the number of pods per plant, and pod diameter were negatively correlated with the days to 50% of the flowering stage. Pod width showed no significance correlation with any other trait. While there was a strong negative correlation between seed diameter and seeds per pod. Yield was largely attributed to plant height and seed diameter. PGRI-44 and PGRI-42 were observed to be the most diverse genotypes in terms of studied morphological traits. Whereas V20 and 19723 were almost genetically identical genotypes. This study would assist in selecting genotypes with diverse genetic background for use in the future pea breeding programs.

