

Genetic diversity studies in indigenous and exotic sesame (*Sesamum indicum* L.) germplasm

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ABSTRACT

Sesamum is an important and ancient seed crop of world. Huge variability was noted different parts of the world. On the present study, ICAR-IIOR indigenous land races and exotic germplasm accessions representing 15 different countries were evaluated to identify superior genotypes for further improvement program. A total of sixty sesame accessions, 30 indigenous and 30 exotic were evaluated in Augmented Block Design at Hyderabad. Data were recorded and analyzed by R software. The combined analysis showed significant differences among the accessions for all the traits except for number of flowers per leaf axil. Principal Components Analysis showed that the first five PCs with eigen values greater than unity about 62.8% of the total variations among sesame genotypes. Based on PCA score/loadings, the characters such oil content, seed yield, thousand seed weight, days to maturity, days to 50% flowering and seed coat colour contributed to the diversity and these traits were found to be important factors for genetic differentiation in the accessions studied. Shannon-Weiner's diversity index (H_2) for individual traits indicated capsule number per plant, thousand seed weight, capsule width, internode length and days to 50% flowering were more diverse among the lines studied. Interestingly, the trait thousand seed weight in both multivariate analyses (PCA and Shannon-Weiner's diversity index) proved to contribute more towards the diversity. The present material may be exploited further selection of contrasting parents from these accessions to develop mapping populations or MAGIC populations for marker aided breeding schemes.

Keywords: *Cluster analysis, Genetic diversity, Principal Component analysis and Shannon-Weiner's diversity index*