

Study on genetic variability, heritability and genetic advance in F_3 populations in Indian mustard (*Brassica. juncea* L. czern & coss.)

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SUMMARY

21 genotypes, (6 varieties viz Sanjuchta ASCEH, vaibhav, PBR – 7, Laxmi, CS-52 and Type-59 and their 15 F_3 crosses of Indian Mustard were used to work out genetic variability and heritability and genetic advance. The experiment was laid out in an R.B.D. of 3 replications of 4 rows each. The row length was 4 m and the spacing was 45 × 15 cm. The study revealed that the treatments differed highly significantly from each other for days to flowering and maturity, plant height, siliquae/branch and seed yield/plant, characters. The estimates of phenotypic variances were higher than their corresponding genotypic variances. Plant height, siliquae\branch and seed yield/plant had high heritability estimates along with high genetic advance. Thus selection for these characters will bring about improvement in this crop.

Key words : *Brassica juncea*, Genetic variability, Heritability and Genetic advance.

Mustard (*B. juncea*) is one of the most important oil seed crops, rapeseed and mustard account for over 31% of the world's edible oil supply and are the third most important edible oil source other than soyabean and palm. In India brassicas ranks second in acreage with 6.60 million ha. They have ability to germinate in the cooler agriculture regions and to higher elevations as well as winter crop. In the temperate zones brassicas have about 40% oil on a dry weight basis. The meal contains 38.44% high quality protein%. In India the population of rapeseed-mustard has under gone phenomenal change. The area, production and productivity have increased from 1.94 million hac (0.81/m tons) and 902 kg/hac. in 2002-2003 The Indian mustard. *Brassica juncea* L. (Czern & coss) which account about 90% of total area under rapeseed-mustard. The cultivation of mustard crop

faces several types of problems for its improvement, First of all their is need to enhance the seed yield by changing the plant type adopted to varied environmental conditions viz fertilizers application, adaptability and resistance to insect-pest and disease for which the variability existed among the available germplasm lines should be known. Therefore, the present investigation was conducted taking 15 F_3 hybrids along with their 6 parents to assess genetic variability, heritability and genetic advance for the improvement of metric traits.

MATERIALS AND METHODS

The present experiments was conducted in Rabi season of 2003-2004 at Agriculture Research Farm of RBS college, Bichpuri, Agra in R.B.D of 3 replication of 4 rows each. The row length was 4 m and the spacing

Table 1: ANOVA R.B.D. for the eight characters under study in Indian mustard

Source of variation	D.F.	Days to flowering	Days to maturity	Plant height at maturity (cm)	No of primary branches plant	No of siliquae/Branch	No of seeds/siliqua	Seed yield/Plant	1000 seed weight
Replication	2	7.2500	7.4687	9.4375	0.0081	0.0390	0.6479	0.9677	0.0154
Treatments	20	43.4100**	40.4254**	223.35**	0.1662**	100.4808**	0.9461*	12.2006**	0.0436
Error	40	4.3751	2.5635	3.06	0.0290	4.24	0.2504	1.1907	0.0214
SE ±		1.7078	0.1307	1.43	0.1392	1.68	0.4085	0.8909	0.1195
C.D. at 5%		3.4514	0.2641	2.89	0.2813	3.39	0.8255	1.8005	0.2415

* Significant at 5% level of significance

**Significant at 1% level of significance

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