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Analysis of heritability and genetic advance in relation to yield and its components in Indian mustard (*Brassica juncea* L. Czern and Coss) under normal and late sown conditions

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SUMMARY

Heritability and genetic advance for 11 metric traits (days to 50% flowering, days to maturity, plant height, primary branches per plant, secondary braches per plant, number of siliqua on main raceme, length of main raceme, seeds per siliqua, 1000-seed weight, seed yield per plant and oil content) were studied in N.D. University of Agriculture and Technology, Kumarganj, Faizabad (U.P.), in *rabi* 2006-07 using 7 Indian mustard cultivars (NDR-190, NDR 8208, NDYR-8, NDRE-4, Urvashi, Vardan and PHR-1), 8F_1 hybrids and 8F_2 hybrids using generation mean analysis. High heritability coupled with high genetic advance were recorded for secondary branches per plant in cross V and VIII under normal sown condition. Under late sown condition seed yield per plant in cross VIII high heritability with high genetic advance. High heritability is due to additive gent effects. It is suggested to improvement these traits selection.

Key words : Indian mustard, Heritability, Genetic advance.

Improvement of genetic architecture of any crop depends upon the nature and extent of genetic variability required to effective selection in any breeding material. The heritable variation is marked by non-heritablevariation, which creates difficulty in exercising selection. Hence, it becomes necessary to spilt over all variability into its heritable and non-heritable components with the help of certain genetic parameters, which may enable the breeders to plan out proper breeding programme. Since many characters of economic importance are highly influenced by environmental conditions. Therefore, the progress of a population mainly depends upon the amount and magnitude to genotypic variability present in the population.

MATERIALS AND METHODS

The present investigation was conducted at Students Instructional Farm of N.D. University of Agriculture and Technology, Kumarganj, Faizabad (U.P.) during *rabi* 2006-07 under normal and late sown condition. The experimental material comprised of 8 cross combinations derived from 7 parents of Indian mustard. The cross combination were NDR-190 x NDRE-4 (I), NDR-190 x NDYR-8 (II), NDR-8208 x NDRE-4 (III), NDR-8208 x PHR-1 (IV), Urvashi x PHR-1 (V), Urvashi x Vardan (VI), Vardan x NDRE-4 (VII) and NDYR-8 x PHR-1 (VIII), in which P_1, P_2, F_1, F_2, BC_1 and BC_2 generations were grown in Compact Family Block Design with three replications. In each plot, one row each of P_1, P_2, and F_1, six rows of F_2 and four rows of BC_1 and BC_2 were allotted. The crop was spaced row to row 30 cm and plant to plant 15 cm. Data were collected on days to 50% flowering, days to maturity, plant height, primary branches per plant, secondary branches per plant, number of siliqua on main raceme, seeds per siliqua, 1000-seed weight, seed yield per plant and oil content. The heritability according to the formula suggested by Burton and Vane (1953). Expected genetic advance was estimated as suggested by Johanson *et al*. (1955).

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RESULTS AND DISCUSSION

High heritability (h^2b) (>75%) coupled with high genetic advance (>40%) were recorded for secondary braches per plant in cross V and VIII under normal sown condition. Under late sown condition, seed yield per plant in cross VIII had high heritability with high genetic advance. Most likely, the high heritability is due to additive gene effects. These results were supported by Chaudhary *et al*. (2003) and Singh *et al*. (2004).

High heritability with moderate genetic advance (>20% to <40%) were recorded for primary branches per plant (cross II), secondary branches per plant (cross I, II, III, IV, VI, and VII), seeds per siliqua (cross II), 1000-seed weight (cross III, IV, V and VIII) and seed yield per plant (cross I, II, III, IV, V, VII and VIII) under