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Genetic Variability for Yield and Some Yield Attributing Traits in Greengram

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Greengram [*Vigna radiata* (L.)] Wilczek) is one of the important grain legume crops in India. Breeding high yielding varieties of crop require information on the nature and magnitude of variability in the available material. Heritability estimates facilitate evaluation of hereditary and environmental effects in the total phenotypic variation. It is also useful in prediction of genetic advance under selection. Therefore, the present study was conducted to assess the extent of variability, heritability and genetic advance for seed yield and its components in greengram.

The materials for the present investigation consisted of 57 genotypes of greengram chosen out of a large collection of greengram germplasm maintained at Pulses Research Station, GAU, Junagadh.(Gujarat). The trial was conducted in a randomized block design with 3 replications during summer 1995. Each entry was grown in a single-row plot of ten plants, spaced at 30 x 10 cm. Five competitive plants from each plot were selected and observations were recorded on seed yield per plant (g), days to flowering, days to maturity, number of pods per plant, pod length (cm), number of seeds per pod, number of clusters per plant, number of branches per plant, plant height (cm) and 100-seed weight (g). Mean values were statistically analyzed for all the characters. Genetic coefficient of variation was calculated according to Burton (1951), heritability in broad sense (H) and genetic advance were computed according to the formula suggested by Allard (1960).

The analysis of variance highly significant differences among the genotypes for all the characters studied. It was observed that wide range of variability existed for various characters studied as evidenced by range (Table 1). The highest genotypic coefficient of variability (GCV) was observed for number of pods per plant (23.46%) followed by seed yield per plant (22.62%), number of branches per plant (21.91%), number of clusters per plant (21.38%) and plant height (16.54%). These characters also revealed high phenotypic coefficient of variation, heritability and high genetic advance expressed as percentage of mean (Table 1). High heritability coupled with high genetic advance as percentage of mean shows the most effective condition for selection and was observed for number of pods per plant, seed yield per plant, number of clusters per plant, number of branches per plant and plant

TABLE 1

Mean, range, coefficient of genotypic (GCV%) and phenotypic variation (PCV%) heritability (h^2_{BS}) and genetic advance as per cent of mean (GA).

Character	*General mean*	*Range*	*GCV %*	*PCV %*	h^2	*GA*
Seed yield per plant	5.68 ± 0.18	3.3 - 7.9	22.62	22.97	97.2	45.91
Days to 50 per cent flowering	42.50 ± 0.69	38.3 - 46.7	4.34	4.78	82.5	8.13
Days to maturity	67.97 ± 0.78	62.0 - 75.7	4.11	4.34	89.4	8.00
Numbers of pods per plant	15.57 ± 0.43	10.1 - 22.7	23.46	23.70	98.0	47.84
Pod length	6.52 ± 0.21	5.5 - 7.5	7.35	8.37	78.2	13.35
Number of seeds per pod	8.63 ± 0.41	6.8 - 9.5	6.20	8.46	53.6	9.38
Number of clusters per plant	4.18 ± 0.21	2.3 - 5.9	21.38	22.27	92.2	42.37
Number of branches per plant	2.46 ± 0.18	1.3 - 3.6	21.91	23.76	85.0	41.48
Plant height	37.83 ± 1.04	24.8 - 58.7	16.54	16.89	96.0	33.38
100-Seed weight	4.30 ± 0.18	3.5 - 5.1	10.15	11.39	79.4	18.58

height. This condition is due to additive nature of gene action. Paramasivam and Rajasekaran (1980) also reported high heritability with high genetic advance for number of pods per plant, seed yield per plant, number of clusters per plant, number of branches per plant and plant height. There are also few characters like days to flowering and days to maturity which showed high heritability but low genetic advance which is due to non-additive gene action (Liang and Walker, 1968). The lower value of these parameter were reported by Patil *et al.* (1987) and Veerabadhiran and Jehangir (1995) for days to flowering, days to maturity, seeds per pod, pod length and 100-seed weight.

The study indicated that phenotypic selection for pods per plant, seed yield per plant, number of clusters per plant, number of branches per plant and plant height would be most effective.

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