

Genetic variability, heritability and genetic advance for quantitative characters in Fenugreek (*Trigonella foenum-graecum* Linn)

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ABSTRACT

Sixty diverse genotypes of fenugreek germplasm (*Trigonella foenum-graecum* Linn) were evaluated where phenotypic co-efficient of variation was greater than genotypic co-efficient of variation regarding yield per plot, yield (t/ha), 1000 grain weight, number of pods per plant, length of pod and number of grains per pod. Four character *i.e.*, 1000 grain weight, length of pod, number of days to 50% flowering and number of grains per pod exhibited high heritability. Highest genetic advance was recorded with yield (t/ha) or yield per plot, number of grains per pod. It ranged from 0.02% to 16.36 % for all the character.

Key words : Fenugreek, Genetic variability, Heritability

The exploration of genetic variability in the available germplasm is prerequisite in a breeding programme for effective selection of superior genotypes. The partitioning of total variability into heritable and non-heritable components by using suitable design will facilitate the breeding work. In view these, the present investigation was under taken to estimate the heritable and non-heritable components of variation and genetic parameters such as genotypic co-efficient of variation, heritability and genetic advance in 60 germplasm of fenugreek.

MATERIALS AND METHODS

The experimental material consisting of sixty (60) diverse genotypes of fenugreek was grown during the *rabi* season (2007-08) under All India Co-ordinated research project at Research Farm of Horticulture Department, Tirhut College of Agriculture, Dholi, Muzaffarpur (Bihar). The sixty germplasm were sown in a randomized block design with two replications. Each plot consisted of ten rows of 3 meter length with row to row and plant to plant spacing of 30 and 10 cm, respectively. Observations were recorded on five competitive plants in each plot for ten characters *viz.*, Plant height, number of branches per plant, number of days to 50% flowering, number of pods per plant, number of grains per pods, length of pod, number of days to maturity, 1000-grain weight, yield per plot and yield (t/ha). The mean value of data were subjected to statistical analysis to obtain analysis of variance (Panse and Sukhatme, 1985), genotypic and phenotypic co-efficient of variance (GCV and PCV) as suggested by Burton and Devane (1953), heritability in broad sense (Hanson

et al., 1956) and expected genetic advance Johnson *et al.*, 1955.

RESULTS AND DISCUSSION

The data presented in Table 1 revealed that fenugreek genotypes showed significant difference for most of the yield contributing characters under study except height of the plant, number of branches per plant, number of pods per plant. Similar result have been reported by Dixit *et al.* (1994) Castillo *et al.* (2000) and Mishra *et al.* (2006).

This indicated that sixty (60) genotypes used in the study were diverse in all the characters. The mean range components mates (broad sense) and expected genetic gain are presented in Table 2. The perusal of this table indicated maximum range of variations for number of days to maturity followed by number of days to 50 per cent flowering. It was however, of low magnitude table for yield per hectare.

It was interesting to note that a high magnitudes of genetic component of variance was observed for all the characters except yield per plot and per hectare suggesting that variability present was due to genetic factors. This was also evident from the fact that quite low magnitude of variance component due to environment was recorded for all most all the characters.

The estimate of GCV and PCV from 0.30 to 34.85 and 6.63 to 43.70 per cent, respectively. The difference between GCV and PCV values for almost all the traits were indicating less influence of environment factors on the expression of various characters studied which may be due to well adopted field plot techniques and good