Correlation and path coefficient analysis for yield and yield contributing traits in Soybean (*Glycine max* (L.) MERRILL)

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Soybean (*Glycine max* (L.) Merrill) is an important oil seed crop belonging to the family leguminoseae and is commercially grown as food crop. Its seeds are used commercially as human food and animal feed as well as extraction of oil. Economic yield is a complex character consisting of so many contributing components. It is also considered as the ultimate criterion, which a plant breeder has always to keep in view, while evolving a new variety with high yield potential. A clear understanding of the association of plant traits and yield helps a good deal in carrying out crop improvement program successfully. Knowledge of the inter-relationships of quantitative characters with seed yield and among themselves is essential for deciding appropriate selection criteria for improvement of a complex trait like seed yield. Therefore, an experiment was conducted to collect the scientific information on correlation and path coefficient analysis in soybean.

The material, comprising of 40 diverse genotypes of soybean, were evaluated at College Farm of Navsari Agricultural University, Navsari, Gujarat, India. The field experiment was laid out in a randomized block design (RBD) with three replications during *kharif* season. Three rows each of 1.5 m length consisted a plot. Row to row and plant to plant spacing were 45 cm and 15 cm, respectively. Recommended agronomical practices were followed to raise the crop. The total rainfall during the the crop season was 426.76 mm. Observations on twelve

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characters *viz.,* days to fifty per cent flowering, days to maturity, plant height, branches per plant, seeds per pod, pods per plant, pod length, seed yield per plant, 100-seed weight, protein as well as oil content and water absorption capacity were recorded on five randomly selected plants in each treatment. Analysis of variance was done by the method suggested by Panse and Sukhatme (1978). The genotypic (r_g) and phenotypic (r_p) correlation coefficients were calculated by adopting the procedure expounded by Miller *et al*. (1958). The path coefficient analysis was worked out using the procedure described by Dewey and Lu (1959).

Analysis of variance revealed the significant differences among genotypes for all the traits under study, indicating the presence of wide range of variability.

Genotypic and phenotypic correlation coefficients between the various traits were presented in Table1. Genotypic correlation coefficient provides measures of genetic association between traits and thus helps to identify the more important as well as less important traits to be considered in breeding programs. The results of genotypic and phenotypic correlation coefficient (Table 1) revealed comparatively higher degree of genotypic correlation coefficient than their phenotypic counterparts in most of the characters indicating a high degree of association between two characters at genotypic level. Similar types of findings were also reported by Mukhekar *et al*. (2007); Vart *et al*. (2005) and Wani *et al*. (2007). In the present study seed yield per plant was found to be positively correlated with pods per plant, plant height, days to maturity and days to fifty per cent flowering indicating that these attributes were mainly influencing the seed yield in soybean. These results have been in conformity with those of Ramana *et al*. (2000) for days to fifty per cent flowering, maturity and plant height. Pods per plant exhibited positive and highly significant association with plant height, days to maturity and days to fifty per cent flowering. This indicated that late maturity and tall plant habit will increase