

Correlation and path coefficient analysis in sponge gourd [*Luffa cylindrica* (Linn.) M. Roem.]

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SUMMARY

Correlation studies in 30 genotypes of sponge gourd revealed that marketable fruit yield per plant exhibit significant positive correlation with number of fruit per plant and fruit length. In general, genotypic correlation coefficients were higher than the corresponding phenotypic correlation coefficients suggesting that the environmental influence reduces the relationship between yield and yield contributing characters of sponge gourd. Path coefficient analysis showed that number of fruit per plant, days to appear first female flower, fruit length, fruit diameter, number of seeds per fruit and 100-seed weight had direct positive effects on marketable fruit yield per plant. This indicates that this character was the major contributor to fruit yield. Therefore, maximum weightage should be given to this character for improvement of yield in sponge gourd.

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To increase the yield, studies carried out on the direct and indirect effects of yield components provide the basis for its successful breeding programme. To make available high yield is one of the most important purposes for sponge gourd. As known, fruit yield is a complex character that can be determined by several components which reflect positive or negative effects upon these traits mean while, it is important to examine the contribution of each of the various components in order to attract the attention to which one has the greatest influence on fruit yield. Therefore, information on the relation of yield components with fruit yield is of great importance to a breeder in selecting a desirable genotype.

Correlations between yield and yield components have been analyzed in 30 genotypes of sponge gourd. There are a few investigations which have been recently released on sponge gourd. Basing decisions solely on correlation coefficients may not always be effective because they provide very limited information only, disregarding interrelations among components. Thus, many breeders were involved in analyzing the path coefficient. Usefulness of the information obtained from

the correlation coefficients can be enhanced by partitioning into direct and indirect effects for a set of prior cause-effect interrelationships. The Path coefficient analysis has been used successfully to clarify interrelationships between yield and several other characteristics for sponge gourd.

MATERIALS AND METHODS

Thirty sponge gourd genotypes were used as a plant material in the study. Field experiments were conducted at Vegetable Research Station Jagudan, (Gujarat) during 2007-08. The trials were carried out in complete randomized block design with 3 replications. The plots consisted of 2 rows with five plants each, which were spaced 1.5m x 1.5m, yield and yield contributing traits were recorded on five randomly selected plants. The simple correlation coefficients between all possible combinations of variables were worked out according to Al-Jibouri *et al.* (1958) and the Path-Coefficient technique was performed according to the method suggested by Dewey and Lu (1959). In path analysis, marketable fruit yield per plant was dependent variable and the other traits were considered as independent variables.

RESULTS AND DISCUSSION

The correlation studies revealed that in general an estimate of genotypic correlation coefficient was higher than corresponding phenotypic correlation coefficient,

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