



Research Paper

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Correlation and path co-efficient studies in tomato

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ABSTRACT : Studies on correlation and path analysis were carried out using thirty tomato genotypes. Fruit yield had a positive and highly significant association with number of fruits per plant and number of branches per plant strong association of these traits revealed that the selection based on these traits would ultimately improve the fruit yield and it is also suggested that hybridization of genotypes possessing combination of above characters is most useful for obtaining desirable high yielding segregation. Path coefficient analysis revealed that number of flowers per cluster and number of branches per plant had the highest positive direct effect on fruit yield both at genotypic and phenotypic levels and most of the fruit related traits contributed of fruit yield mainly through number of branches. Hence, it would be essential to lay stress on these characters in selection programmes aiming at increasing the yield.

KEY WORDS : Tomato, Correlation, Path co-efficient analysis, Direct effect, Fruit yield

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Tomato (*Lycopersicon esculentum* Mill.) is one of the most widely grown vegetables in India. Efforts are being made to increase its productivity by developing superior varieties. However, yield is a complex character; its direct improvement is difficult. Knowledge in respect of the nature and magnitude of associations of yield with various component characters is a pre requisite to bring improvement in the desired direction. A crop breeding programme, aimed at increasing the plant productivity requires consideration not only of yield but also of its components that have a direct or indirect bearing on yield. Breeders of self fertilized crops quite often select directly for fruit yield to bring about yield improvement, Nevertheless, indirect selection may be more efficient, especially if the secondary character is highly correlation with yield and is easily measurable. Path coefficient analysis measures the direct influence of one variable upon another and permits the separation of correlation coefficient into components of direct and indirect effects (Prashanth *et al.*, 2008). Keeping this in view, the present study of tomato was undertaken.

RESEARCH METHODS

Thirty genotypes of tomato were evaluated in a Randomized Block Design with three replications during

Kharif 2006 with standard cultural practices. From each entry, five randomly selected plants were used for recording data on plant height, number of branches, days to first flowering, days to 50 per cent flowering, number of flowers per cluster, days to first fruit set, number of fruits per plant, average fruit weight, pericarp thickness, number of locules per fruit, fruit shape index, total soluble solid, number of fruits per cluster, number of clusters per plant, fruit yield per plant, fruit borer incidence, bacterial wilt and TLCV incidence were observed on five randomly selected plants.

The phenotypic correlation coefficient and genotypic correlation coefficient and direct and indirect effects were computed by using procedure given by Deway and Lu (1959) and Al-Jibouri *et al.* (1958).

RESEARCH FINDINGS AND DISCUSSION

The estimates of phenotypic and genotypic correlation coefficient (Table 1 and 2) revealed that the genotypic correlations were of higher magnitude than the corresponding phenotypic values for most of the character combination, thereby, establishing predominant role of heritable factors. Fruit yield had a positive and highly significant association with number of fruits per plant and number of branches per plant at both genotypic and phenotypic levels. Direct selection