# Variability And Path-Coefficient Analysis In Chilli (*Capsicum Annum L.*)

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**ABSTRACT**

Studies on variability for various yield and yield contributing characters in chillies collected from NBPGR New Delhi exhibited good amount of variability for dry fruit weight, fresh fruit weight, fruits per plant and number of branches per plant. The $H^2$ (bs) was very high for almost all characters studied. However the genotypic correlations to be greater in magnitude than phenotypic ones. The dry fruit yield was significantly and positively associated with fresh fruit weight, fruits/ plant, plant spread, plant height and number of secondary branches/plant. The path coefficient analysis revealed that the fresh fruit weight as the most important component in determining the yield and had a direct effect on yield. The fresh weight of fruits, fruits per plant were found to be an important yield indicator in chilies and can react upon these characters for making direct selections.

**Key words :** Variability, Path-coefficient, Chilli.

## INTRODUCTION

Chilli is an important cash crop and improvement of its yield by appropriate breeding method, is a long felt need. Yield is a complex quantitative character governed by a large number of genes and is greatly influenced by environmental factors. Hence selection of superior genotypes based on yield alone may not be effective. Indeed a knowledge of the nature and magnitude of relationship of the various characters with yield is important in making selection in crops.

To realize this objective path coefficient analysis was attempted to understand nature of association of several characters contributing to yield in chilli.

## MATERIALS AND METHODS

Fourty strains of chilli collected from M.P.K.V., Rahuri, K.K.V. Dapoli and NBPGR, Satelite centre, Amravati were raised at Agril. Botany farm, College of Agriculture, Pune-5 during *Kharif-1998* in a randomized block design with three replications. Each plot consisted of single row of 4.5 mt. length with a spacing of 60 cm. between rows and 45 cm. between plants. Data were collected on five randomly selected plant from each treatment. Observations were recorded on days to flowering, days to maturity, number of primary branches/ plant, number of secondary branches/plant, plant, height, plant spread, fruit length, fruit girth, seeds/fruit, number of fruits/plant, fresh fruit weight/plant and dry fruit weight/ plant. Genotypic and phenotypic correlations were

calculated by using the method described by Singh and Choudhary (1977) and path coefficient analysis was done by following the procedure suggested by Dewey and Lu (1959)

## RESULTS AND DISCUSSION

The GCV and PCV estimates were highest for dry fruit weight followed by fresh fruit weight, number of fruits per plant and number of primary branches. The magnitude difference were low in case of GCV and PCV for all the characters indicating less role of environment (Table 1). Heritability was high for all the characters. Fruit length recorded highest (94.15) broad sense heritability while it was least for days to maturity (46.32) (Table1). Similar findings recorded by Singh and Saini (1976). However, Hiremath and Mathapathi (1977) reported low heritability for the number of branches/plant.

Dry fruit yield per plant was significantly and positively correlated at both genotypic and phenotypic levels with fresh fruit weight (0.962, 0.960), fruits per plant (0.893, 0.889), plant spread (0.629, 0.611), plant height (0.564, 0.551) and number of secondary branches/plant (0.489, 0.484) However the yield was significantly and negatively correlated with days to maturity (-0.351, -0.319) and this will help in making simultaneous selections in segregating generations while selecting high yielding types in chilli. Gandhi (1998) and mehrotra *et. al. (*1977) findings were similar to the findings for present investigations.

Path analysis (Table 2) revealed that the fresh fruit weight had the highest positive direct effect (0.741) and its association with dry fruits yield was significantly positive

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