

## **PHENOTYPIC CORRELATION AND PATH COEFFICIENT ANALYSIS FOR SOME METRIC TRAITS IN BRINJAL (*Solanum melongena* L.)**

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### **ABSTRACT**

Evaluation of twenty diverse brinjal genotypes was done for association between yield and its components at phenotypic level besides estimating the direct and indirect effects through path coefficient analysis. The correlation coefficient at phenotypic level of yield per plant was significant and positive with number of fruits per plant, percentage fruit set, leaf area index and plant height. These traits should be considered highly dependable and reliable for selection to improve the yield. Whereas, negative and significant correlation was observed with days to flower initiation, number of branches per plant, days to first picking, number of fruits per cluster and days to last picking. Path coefficient analysis showed that like traits weight of fruit, number of fruits per plant, days to flower initiation, seed weight per fruit, leaf area index, number of fruits per cluster, days to first picking, length of fruits and number of branches per plant exerted direct positive effect on yield per plant. Hence, emphasis should be given for such traits while imposing selection to improve yield in brinjal.

**Key words :** Phenotypic correlation, Phenotypic path coefficient analysis, Association analysis.

**Y**ield is a complex trait and polygenic in nature. The ultimate aim in most of the brinjal breeding programmes is high yield. For augmentation of yield, it is essential to know the genetics of yield and its components. Correlation and path coefficient analysis furnish information regarding the nature and magnitude of various association and help in the measurement of direct influence of one variable on the other. Phenotypic correlation is the association between two variables which can be directly observed. It includes both genotypic and environment effects and therefore differs under different environmental conditions. Correlation coefficient alone does not give a clear picture of association between yield and its components therefore it is partitioned into direct and indirect effects separately by path analysis. It measures the direct and indirect contribution of various independent characters i.e. the cause of association between two variables. Hence the present investigation was undertaken to study the inter-relationship among various traits for yield improvement in brinjal.

### **MATERIALS AND METHODS**

The present investigation was carried out at Seed Research Farm, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.), during *rabi* season of 2005-

2006. The experimental material comprises of 20 genotypes of brinjal raised in randomized block design with three replications. Plots each of 4.5 x 3.6m size with plant spacing 60 x 45cm, accommodating 60 plants were maintained. Observations were recorded for 14 quantitative characters by selecting 10 competitive plants randomly from each plots for traits plant height, number of branches per plant, leaf area index, days to flower initiation, days to first picking, days to last picking, number of fruits per cluster, percentage fruit set, fruit length, fruit girth, number of fruits per plant, weight of fruit, seed weight per fruit and yield per plant. Phenotypic correlation was computed by the formulae suggested by Miller *et al.* (1958). Path coefficient analysis was carried out to partition the total correlation into direct and indirect effects as suggested by Dewey and Lu (1959).

### **RESULTS AND DISCUSSION**

The phenotypic correlation coefficient among various yield and its attributing characters are shown in Table 1. Results revealed that yield per plant had significant and positive correlation with number of fruits per plant, percentage fruit set, leaf area index and plant height. These findings were supported by Rajput *et al.* (1996) for percentage fruit set ; Bora and Shadeque (1993) and Mohanty (2001) for plant height and number of fruits per plant. Whereas, negative and significant association was observed with days to flower initiation, number of branches