

## Association of characters and path coefficient analysis studies in rice bean [*Vigna umbellata* (Thumb) Ohwi and Ohashi]

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### ABSTRACT

The correlation and path analysis were worked out for fifty genotypes of rice bean for 12 different characters. The correlation studies revealed that the seed yield per plant exhibited significantly positive correlation with number of pods per plant, number of seeds per pod, pod length, number of branches per plant and harvest index. Path coefficient revealed that number of pods per plant with the highest direct effect and contributed towards yield. Other traits, number of pods per plant, pod length, number of branches per plant, plant height at harvest, and days to 50% flowering were also found to be important yield indicators in rice bean.

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**Key words :** Phenotypic and genotypic correlation, Path analysis

### INTRODUCTION

The information about interrelationship between the yield and yield components facilitates the choice of suitable breeding method to be applied and selecting the parents for improving the crop. The phenotypic and genotypic correlations have their own importance in breeding programme. The phenotypic correlation coefficient helps in determining selection index whereas genotypic correlation coefficient provides a close measure of association between characters and gives an indication of characters which may be useful for overall improvement of crop. They may also help to identify characters that have little or no importance in the selection programme. However they do not provide the exact picture of direct and indirect cause of such association which can be had through path analysis. Path analysis suggested by Dewey and Lu (1959) was used to estimate the direct and indirect contribution of different traits on yield.

### MATERIALS AND METHODS

The present investigation was conducted at Botany farm, College of Agriculture, Pune-5. Fifty germplasm lines received from Officer

In-Charge, NBPGR, Regional Station, Umiam (Meghalaya) were evaluated in replicated trial during *Kharif* 2006. In a Randomized Block Design into three homogenous replications, fifty genotypes were randomly sown. Each entry was represented by the row of 4.5 m length spaced at 45 cm between the rows and 15 cm

between the plants within the row. The basal dose of 25 kg N and 50 kg  $P_2O_5$  per hectare was applied to whole experiment area. To understand the association among the characters, genotypic and phenotypic correlation coefficients were worked out by adopting method described by Singh and Chaudhari (1977). Path coefficient analysis was done according to the procedure suggested by Dewey and Lu (1959).

### RESULTS AND DISCUSSION

The number of pods per plant (0.9604), number of seeds per pod, pod length, harvest index, number of branches per plant and plant height at harvest showed highly significant positive association with seed yield per plant at genotypic level (Table 1). Days to 50% flowering showed significantly negative correlation with seed yield per plant (-0.2901). However, other three characters, 100 seed weight, number of root nodules per plant and shattering percentage exhibited non-significant positive correlation. Days to maturity showed non-significant negative correlation with seed yield per plant at genotypic level. The finding of the present study coincides with Sharma *et al.* (1991), Chaudhary *et al.* (2000), Sharma and Hore (1994) and Baisakh (1992).

Among the 12 characters studied, pod length recorded maximum direct effect (1.8114) on seed yield per plant (Table 2). This trait had significant and positive correlation with seed yield. Similarly positive direct effect were obtained for plant height at harvest, shattering percentage, days to maturity, number of branches per

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