Correlation and path coefficient studies in moth bean

S. C. PATIL, V. P. PATIL, HARSHAL E. PATIL* AND S. V. PAWAR
Department of Agricultural Botany, Mahatma Phule Krishi Vidyapeeth, RAHURI (M.S.) INDIA

SUMMARY

The results obtained from the "Correlation and path coefficient studies in moth bean (*Vigna aconitifolia*)" of 45 genotypes revealed that, biomass per plant, number of pods per plant and 100 seed weight were good indicators of grain yield per plant and can be used for making direct selection for yield. The seed yield per plant was positively and significantly correlated with number of primary branches per plant, plant spread, number of secondary branches per plant, number of pods per plant, number of seeds per pod, 1000 seed weight, plant height and negatively correlated with protein content at genotypic level. Days to maturity shows significant but negative association with yellow mosaic virus. The high magnitudinal direct effect of number of primary branches per plant, number of pods per plant, 1000 seed weight and biomass per plant along with highly significant correlation in the desirable direction towards seed yield for plant indicated the true and perfect relationship between seed yield and these characters suggesting direct selection based on these characters would help in selecting the high yielding genotypes in moth bean.

Key words : Correlation, Path coefficient, Moth bean.

Moth bean (*Vigna aconitifolia*) is an important crop of dry and semiarid areas of India. Among *kharif* pulses, it has the maximum capacity to resist drought conditions. It is an excellent source of high quality protein (23.6 %) in the diet of low-income group in developing countries.

Knowledge about association between the yield and yield components facilitates the choice of suitable breeding method to be applied and selecting the parents for improving the crops. The phenotypic and genotypic correlations have their own importance in breeding programme. The phenotypic correlation coefficients helps in determining selection index, whereas genotypic correlations provide a dose measure of association between characters and gives an indication of usefulness of characters in overall improvement of the crop. They may also help to identify characters that have little or no importance in the selection programme.

Correlation coefficients along with path effects provide more reliable information, which can be effectively used in various crop improvement programmes. If the correlation between a causal factor and direct effect is more or less of equal magnitude, it explains the true and perfect relationship between the traits and direct selection through these traits will be rewarding. However, if the correlation coefficient is positive and the direct effect is negative or negligible, the indirect causal factors are to be considered in simultaneously selection. Thus path analysis provides the information about characters and their relative importance in selection programme.

MATERIALS AND METHODS

Forty-five genotypes of mothbean collected from Pulses Improvement Project, M.P.K.V., Rahuri. The experiment was laid out in Randomized Block Design with three replications. Those were evaluated for 12 yield and yield contributing characters viz., plant height (cm), plant spread, number of secondary branches per plant, number of pods per plant, number of seeds per pod, 1000 seed weight (g), days to maturing, total biomass per plant, yield per plant (g) and protein content (%).

To understand the association among the characters genotypic and phenotypic correlation coefficients were worked out by adopting method described by Singh and Choudhari (1977), while path analysis was worked out by Dewey and Lu (1959) to estimate the magnitude and direction of direct and indirect effects of various yield and yield contributing characters.

RESULTS AND DISCUSSION
Correlation:

The correlation coefficients for seed yield and its contributing characters in moth bean are presented in Table 1.

In the present investigation, seed yield per plant was positively and significantly correlated with number of primary branches per plant, plant spread, number of secondary branches per plant, number of pods per plant, number of seeds per pod, 1000 seed weight, plant height.

---

* Author for correspondence.