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Intercharacter associations and path analysis of yield components in *rabi* maize

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SUMMARY

Phenotypic correlation coefficients and path coefficients were computed among 7 characters for maize grown in *rabi* seasons of 2004-2005 and 2005-2006. The association analysis revealed high positive correlation of grain yield with cob weight, length of cob, plant height, total dry matter, 1000 grain weight, leaf area per plant and shelling percentage. Path analysis also revealed highest positive or indirect effects of cob weight followed by plant height and shelling percentage during first year and shelling percentage and leaf area during second year and negative direct effects of total dry matter during first year and plant height during second year.

Key words : *Rabi* maize, Correlation, Path analysis, Correlation regression coefficient, Path coefficient.

Improvement in most of the crop plants is achieved mainly by selection of the promising types from a lot or population or from the progeny generated by controlled hybridization or by identification of chance seedlings. However, agronomist are interested in identifying, the attributes of the plant responsible for higher production. Once such attributes are identified, it becomes easier to manipulate them in such a way that they will finally augment the total production.

The grain yield in maize (*Zea mays* L.). As a complex characters being influenced by a number of interrelated traits. The interdependence of the component characters among themselves often influences their relationship with grain yield, as a result, the information based on correlation coefficients becomes undependable. But the path coefficient analysis permits the partitioning of correlation coeffIcients into direct and indirect effects and gives more realistic relationship of the characters and helps in identifying, the most effective components. Therefore, the present investigation was designed to workout correlation coefficients and path coefficients of seven developmental and yield contributing characters for grain yield in *rabi* maize.

MATERIALS AND METHODS

The experimental material consisting of maize hybrid 'Kargil' was grown in *rabi* seasons of 2004-2005 and 2005-2006 at Parbhani using of split plot design with four replications. Five random plants from net plots were used to record observations on plants height, leaf area, cob weight, total dry matter, length of cob, 1000-grain weight and shelling percentage. The association of 7 characters with grain yiekt in both seasons using mean data were computed following Panse and Sukhatame (1978).

The homogeneity of variance was tested for error variance of two seasons. The path coefficient analysis using mean data for two seasons was performed.

RESULTS AND DISCUSSION

Simple correlation coefficients (r) and regression coefficients (b) computed between weight of maize grains per plant (y) vs various plant characters (xn) of maize during both the years are presented in Table 1.

The 'r' values presented in Table 1 revealed that various plant characters of maize *i.e.* plant height, leaf area, total dry matter, cob weight, cob length and 1000 grain weight were positive and significant during both the years. Simple regression coefflcients (b values) also showed the similar algebraic trends as those were noticed in simple correlation in both the years of experimental studies.

The path analysis of plant characters for direct (diagonal) and indirect (off diagonal) on grain yield of maize for both the years were computed and preserited in Table 2.

The results on path analysis presented in Table 2 indicated that the cob weight during first as well as second year had remarkable positive direct impact on grain yield.

During first year, the next to follow was plant height (0.0585), shelling percentage (0.0121). However, direct inf1uence of 1000 grain weight (0.0094) and leaf area (0.0041), was marginal but positive indicating its poor direct contribution towards the grain yield.

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