Genotypic character relationship and phenotypic path coefficient analysis in chilli pepper genotypes grown under tropical condition

ABSTRACT

Background: Studies on genotypic and phenotypic correlations among characters of crop plants are useful in planning, evaluating and setting selection criteria for the desired characters in a breeding program. The present study aimed to estimate the phenotypic correlation coefficients among yield and yield attributed characters and to work out the direct and indirect effects of yield-related characters on yield per plant using path coefficient analysis. Twenty-six genotypes of chili pepper were laid out in a randomized complete block design with three replications. Results: Yield per plant showed positive and highly significant ($P \leq 0.01$) correlations with most of the characters studied at both the phenotypic and genotypic levels. By contrast, disease incidence and days to flowering showed a significant negative association with yield. Fruit weight and number of fruits exerted positive direct effect on yield and also had a positive and significant ($P \leq 0.01$) correlation with yield per plant. However, fruit length showed a low negative direct effect with a strong and positive indirect effect through fruit weight on yield and had a positive and significant association with yield. Conclusion: Longer fruits, heavy fruits and a high number of fruits are variables that are related to higher yields of chili pepper under tropical conditions and hence could be used as a reliable indicator in indirect selection for yield.

Keyword: Cause-effect relationship; Capsicum spp; Correlation; Chili breeding