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# Correlation studies for seed yield in cowpea *(Vigna unguiculata (*L.*)* Walp) under rainfed condition

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SUMMARY

Twenty-four genotypes of cowpea (Vigna *unguiculata* (L.) Walp.) were evaluated during rainy season for correlation study. Yield was found significantly and positively correlated with plant height, number of seed per pod, pod length and test weight and negatively correlated with number of pods per plant at both phenotypic and genotypic levels. At both genotypic and phenotypic level, days to 50 per cent flowering, days to maturity, plant spread and number of branches per plant showed positive but non-significant correlation with grain yield per plant.

Key words : Cowpea, Seed yield, Rainfed.

Cowpea *(Vigna unguiculata* (L.) Walp.) is one of the most popular vegetable as well as grain crop cultivated throughout peninsular India. An efficiency of selection in any breeding programme mainly depends upon the knowledge of association of characters. Hence, a planned breeding programme to improve pod length, number of pods per plant, number of seeds per pod and grain yield per plant etc. needs prior information on correlation. The phenotypic correlation indicates the extent of the observed relationship between the two characters, while the genotypic correlation provides information about linkages for the genes controlling the pair of characters. The present investigation was therefore undertaken to determine correlation coefficients both at genotypic and phenotypic levels in cowpea.

## MATERIALS AND METHODS

The material under investigation consisted of twenty-four cultivars of cowpea comprising of genetically diverse genotypes grown in a randomised block design with three replications at Agriculture College Farm, Pune (India) under rainfed condition. Each treatment consisted single row of 4.5 m length accommodating 30 plants in a row with 15 cm distance within the row and 45 cm distance was kept between the rows.

The observations were recorded on five randomly selected plants of each genotype per replication for ten quantitative traits viz., days to 50 per cent flowering, days to maturity, plant height (cm), plant spread (cm), number of branches per plant, numbers of pods per plant, number of seeds per pod, pod length (cm), test weight (g) and grain yield per plant. The analysis of estimates of correlation was done according to methods given by Panse and Sukhatme (1967).

## RESULTS AND DISCUSSION

The estimates of genotypic and phenotypic correlations between all possible of characters are presented in Table 1. Yield was found significantly and positively correlated at both phenotypic and genotypic levels with plant height, number of seeds per pod, pod length and test weight. Number of pods per plant was negatively correlated with grain yield per plant at both genotypic and phenotypic levels. At genotypic level days to 50 per cent flowering, days to maturity, plant spread and number of branches per plant showed positive correlation with grain yield per plant.

The inter-relationship studies revealed that yield was strongly associated with plant height, number of seeds pod, pod length and test weight. The result were in agreement with those of Dumber *et al.*, (1982), Sawant (1994), Tamilsevam and Das (1994) and Tyagi *et al.*, (2000). It appear that phenotypic correlation for these components should be effective in improving the yield of cowea.

Number of pods per plant was negatively correlated with grain yield per plant at both genotypic and phenotypic level confirming the earlier findings of Rangainh and Nehru (1998). Likewise, test weight was significantly and negatively correlated with number of pod per plant, while significantly and positively correlated with days to 50 per cent flowering, plant height, number of seeds per pod and pod length. Also plant height were significantly and positively correlated with number of seeds per pod, pod length and test weight at both genotypic and phenotypic level, which confirming the earlier findings of Parihar *et al.*, (1997).

Number of pods per plant showed negative correlation with grain yield, this may be because of fact that more number of gappy pods which having less number of seeds per pod hence more number of pods can not contribute to higher yield. In preset investigation, plant height, number of seeds per pod, pod length and test weight were found to be the most important yield contributing characters in cowpea.