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Selection Criteria in Summer Cowpea

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The knowledge of association among different characters and their relative contribution towards yield, directly or indirectly, is of paramount importace to the breeder for making improvement in complex character like yield for which the direct selection is not much effective. Path coefficient analysis proposed by Wright (1921) provides an effective means of finding direct and indirect causes of association. Cowpea is an important pulse crop having good yield potential during summer. The present study was, therefore, undertaken to obtain information on the association between seed yield and its components, and the path coefficients analysis to find-out the indicator charcters to be utilized as criteria for selection for the improvement of seed yield in cowpea during summer.

Nineteen promising and diverse varieties of cowpea were grown in randomized block design with four replications at NARP, Sub-Station, Gujarat Agricultural University, Derol. during Summer, 1986. The plot size consisted of single row 5 m. long and the spacings followed were 60 cm between rows and 10 cm between plants within row. Observations were recorded on seed yield (g/plant), days to initial and 50% flowering, days to maturity, plant height (cm), pod length (cm), pods per plant and seeds per pod (no.), on 5 randomly chosen plants in each variety and in each replication. The mean data were statistically analysed. Correlations both at genotypic and phenotypic levels were computed according to Johnson *et al.*, (1955 B) whereas path coefficients were worked-out using genotypic correlations according to Deway and Lu (1959).

The results on correlation analysis indicated that the seed yield was strongly and positively correlated with pods per plant, both at genotypic and phenotypic levels, indicating that the selection for higher pods per plant would lead to higher seed yield automatically. Days to initial flowering and days to 50% flowering had positive correlation between themselves and also with days to maturity, plant height and pod length but it showed significant negative correlation with pods per plant. The data further revealed that days to maturity exhibited strong positive correlations with plant height and pod length whereas days to maturity and pod length showed strong negative correlations with pods per plant. Negative correlations observed between seed yield and days to flowering indicated that high yielding and early genotypes of cowpea can be developed. Singh and Mehandratta (1969) in cowpea also found that grain yield was correlated with pods number, grains per pod and test weight.

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A persual of the results on path coefficient analysis revealed that the seeds per pod followed by the plant height had the highest direct positive effect on seed yield which suggested that these two characters are the most important yield component in summer cowpea. Singh and Mehndiratta (1968) in cowpea also reported high positive direct effect of seeds per pod on seed yield. It is interesting to note that pods per plant which showed significant positive correlation had given very high negative direct effect, on the contrary, the plant height which had negative correlation with seed yield contributed high direct positive effect. The direct effect of days to flowering and maturity were negative which suggested that it would be feasible to develop high yielding and early maturing genotypes of cowpea better suited to summer conditions.

The data further revealed that days to flower initiation, days to 50% flowering and pod length contributed towards seed yield mainly via pods per plant, plant height and seeds per pod. The indirect effect of plant height and pod length viz., pods per plant were also positive. Therefore, these characters should also be given due importance while constructing selection indices for yield improvement in cowpea during summer under middle Gujarat conditions.

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