

CORRELATION AND PATH ANALYSIS IN CHICKPEA (*CICER ARIETINUM* L.)

POORAN CHAND* AND F. SINGH

*Department of Agricultural Botany, Meerut University
Meerut 250005*

(Received: November 29, 1991; accepted: June 6, 1994)

Studies on character association are useful to the breeder in identifying the suitable genotypes for utilizations in breeding programme. The present study was undertaken to determine correlations coefficients with respect to yield and its components in chickpea.

Forty nine genotypes of chickpea were grown in a randomized block design with three replications during rabi (November to May) 1983-84 at Meerut University Research Farm, Meerut. Each strain was allotted a two rows plot of 6 m length with a spacing of 30 cm x 15 cm. The data were recorded on five random competition plants in each treatment in the central row, in each replication for nine quantitative traits (Table 1). Statistical analysis of the various characters were conducted using the mean values of different genotypes per replication. The correlation coefficients were estimated using the method of Al-Jibouri et al. [1].

Correlation coefficients among yield and its components are presented in Table 1. The grain yield showed positive and significant correlation with seeds per plant, pods per plant and biological yield. The correlation of seeds per plant with plant height, pods per plant and seeds per pod were also positive and significant. The harvest index had positive and significant correlation with pods per plant, seeds per pod, seeds per plant and grain yield. The biological yield showed positive and significant correlation with plant height, pods per plant and seeds per plant. The pods per plant showed positive and significant correlation with plant height only. The 100-seed weight showed negative significant correlation with seeds per plant, pods per plant, seeds per pod, harvest index, biological yield and plant height.

*Present address: Assistant Research Officer, Agril. Res. Station (APAU), Madhira, Dist. Khammam 507203.

Table 1. Correlation coefficients among nine characters in chickpea

Characters	Plant height	Pods per plant	Seeds per pod	Seeds per plant	Biological yield	Grain yield	Harvest index	100-grain weight
Days to flowering	-0.22	-0.24	0.01	-0.17	-0.18	-0.15	-0.17	0.08
Plant height		0.43**	0.16	0.46**	0.53**	0.24	0.17	-0.37**
Pods per plant			0.18	0.89**	0.63**	0.46**	0.50**	-0.48**
Seeds per pod				0.40	0.06	0.19	0.40**	-0.44**
Seeds per plant					0.60**	0.62**	0.56**	-0.56**
Biological yield						0.91**	-0.01	-0.40**
Grain yield							0.30	-0.22
Harvest index								-0.42**

*. ** Significant at 5% and 1% levels, respectively.

The positive association were also observed for seeds per pod with days to flowering, plant height with seeds per pod and grain yield. The positive association of biological yield and grain yield was also found with seeds per pod; and seeds per pod has positive association with plant height.

The association of harvest index with pods per plant and biological yield with pods per plant as observed in the present studies, have also been reported in chickpea earlier [2-7]. Thus, number of pods and seeds per plant appear to be the most important yield contributing characters in chickpea.

REFERENCES

1. H. A. Al-Jibouri, R. A. Miller and H. F. Robinson. 1958. Genotypic and environmental covariance in an upland cross of interspecific origin. *Agron. J.*, **50**: 633-637.
2. B. A. Phadnis, A. P. Ekbote and S. S. Ainchwar. 1970. Path coefficient analysis in gram (*Cicer arietinum* L.). *Indian J. agric. Sci.*, **40**: 1013-1016.
3. D. R. Dewey and K. H. Lu. 1959. A correlation and path coefficient analysis of components of wheat grass seed production. *Agron. J.*, **51**: 515-518.

4. K. P. Singh, V. P. Singh and B. D. Chaudhary. 1977. Path coefficient analysis in chickpea. *Z. Pflanzenzuchtng.*, 79: 219-223.
5. C. L. L. Gowda and B. P. Pandya. 1975. Path coefficient study in gram. *Indian J. agric. Sci.*, 45(10): 473-477.
6. T. S. Sandhu and N. B. Singh. 1970. Genetic variability, correlation and regression studies in gram (*Cicer arietinum* L.). *J. Res. PAU*, 7: 423-427.
7. T. S. Sandhu and N. B. Singh. 1972. Correlation, path coefficient analysis and discriminant function, selection in gram. *J. Res. PAU*, 9: 417-421.