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Short Communication

Effect of intermating in early segregating generations on character association in Chickpea (*Cicer arietinum* L.)

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In self pollinated crops like chickpea (*Cicer arietinum* L.), the conventional methods of handling segregating populations like pedgree or bulk methods do not provide any opportunity for reshuffling of genes. Hence, any unfavourable associations observed in early segregating generation like in F_2 are likely to persist through the filial generations. Whereas, biparental mating in early segregating generations like F_2 helps in breaking unfavourable associations [1, 2]. Keeping this in view, the present investigation was planned to compute and compare the nature and magnitude of correlations among various characters in the biparental progenies (BIPs) and the corresponding selfed generation *viz.*, F_3.

Two genotypes, ICCV-10 and BG-256 were selected on the basis of their peculiar contrasting characteristic productivity related features as well as reaction to wilt. Intermating of selected plants in the F_2 of ICCV-10 × BG-256 cross was attempted and the plants involved in the crosses were also selfed simultaneously to obtain F_3 progenies. The BIP population and its corresponding F_3 population were sown in 8 rows each of 5 m length row. The rows and plants were spaced at 30 cm and 15 cm, respectively. Data were recorded on seed yield (g), plant height (cm), no. of primary branches, secondary branches, no of pods and 100-seed weight (g) on 220 plants in BIP population and on 150 plants in F_3 population. The individual plant data were used for the statistical analysis.

A comparison of correlation co-efficients among characters studied within BIP with those within F_3 populations (Table 1) revealed that, correlation co-efficients in BIP are generally of higher magnitude than in F_3 population. The increase in magnitude of correlation co-efficients would be expected if linkages were in repulsion phase (3). However, in both the populations, association of number of pods with seed yield was high and positively significant. This clearly highlights the fact that, pods per plant is the most important yield contributing character in chickpea. Therefore, in any chickpea breeding programme, selection based on pods per plant is certainly expected to improve the seed yield (4). It was also observed that the non- significant negative association between 100-seed weight and seed yield per plant in F_3 changed to positive and significant in BIP population. Similarly, non-significant positive association between secondary branches and 100-seed weight in F_3 got changed to positive and significant in BIP population. These results indicate that intermating in F_2 was quite effective to

Table 1. Correlation co-efficients among different characters in BIP and F3 populations of chickpea

Character	Population	Primary branches	Secondary branches	Pods per Plant	100-seed weight (g)	Seed yield per plant (g)
Plant height (cm)	BIP	0.745**	0.743**	0.661**	0.130	0.650**
	F_3	0.669**	0.571**	0.635**	–0.001	0.626**
Primary branches	BIP			0.839**	0.770**	0.126
	F_3		0.866**	0.811**	0.048	0.784**
Secondary branches	BIP			0.887**	0.152*	0.887**
	F_3			0.840**	0.106	0.792**
Pods per plant	BIP				0.047	0.984**
	F_3				–0.014	0.948**
100-seed weight (g)	BIP					0.141*
	F_3					–0.058

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

break undesirable linkages. It was thus evident that the reshuffling of genes responsible for correlations amongst some characters resulted in newer recombinants which, presumably were due to changes from a coupling phase to repulsion phase linkages (1) Shifts in correlation's have also been reported in earlier studies on wheat and safflower (1-3, 5, 6).

The present study on the impact of intermating on association pattern in chickpea has clearly brought out its importance in altering the association pattern involving some important components of yield to the breeder's advantages enabling him to increase the efficiency of selection for improving productivity.

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