CHARACTER ASSOCIATION IN MUNG BEAN (*Vigna radiata*.L. Wilzek)

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ABSTRACT

The study was undertaken to examine the nature and magnitude of association of seed yield with other attributes viz., number of branches, number of clusters, number of pods per plant, pod length, number of seeds per pod and 100 seed weight. The seed yield per plant exhibited a high order of positive and significant correlation with number of pods, number of cluster per plant and number of branches per plant and 100 seed weight. Path analysis showed that, the improvement of seed yield could be achieved only through increasing pods per plant.

KEY WORDS :   Mung bean, Character association, Direct and indirect effect.

INTRODUCTION

Mungbean is one of the important pulses crop. To realise a break through in the yield of this crop an effective selection procedure have to be followed mainly based on character combination which affects plant yield to the maximum extent. Hence the knowledge on the contribution of different association of the traits on yield and other association with them are of prime importance. To satisfy the need the association analysis of character was made using fifty seven genotypes of greengram at National Pulses Research Centre, Vamban at Pudukkotai district in summer 1992 season.

MATERIALS AND METHODS

Fifty seven genotypes of greengram representing a broad spectrum of variability were evaluated during Early Summer, 1992 (March - May) at National Pulses Research Centre, Vamban following a complete randomised block design with three replications. Each genotype was accommodated in 3m. long single row with a spacing of 30 x 15 cm. Five plants in each plot were randomly selected for recording observations on number of branches, number of clusters, number of pods per plant. number of seeds per pod, pod length, 100 seed weight and seed yield per plant. Mean values of five plants of each genotype in each replication were used estimation of correlation of path coefficients following the method suggested by Al-Jibouri *et al.*, (1958) and Dewey and Lu (1959) respectively.

RESULTS AND DISCUSSION

The analysis of variance indicated significant differences among fifty seven genotypes for all the characters. The magnitude of genotypic correlation

Table 1.   Genotypic and Phenotypic Correlation Coefficients

Characters	Number of branches/plant	Number of clusters per plant	Pod length	Number of pods per plant	Number of seeds per pod	100 seed weight	Seed yield per Plant	
Number of branches per plant	1.000	0.468 **	-0.166	0.414 **	0.116	-0.228 *	0.301 **	G
	1.000	0.448 **	-0.107	0.362 **	0.051	-0.219 *	0.284 **	P
Number of clusters per plant		1.000	-0.059	0.682 **	0.046	-0.189 *	0.595 **	G
		1.000	-0.047	0.608 **	0.041	-0.183 *	0.554 **	P
Pod Length			1.000	-0.210 *	0.309 **	0.906	-0.301 **	G
			1.000	-0.136	0.292 **	0.068	-0.261 *	P
Number of pods per plant				1.000	-0.210 *	0.302 **	0.729 **	G
				1.000	-0.041	0.276 **	0.675 **	P
Number of seed per pod					1.000	-0.194 *	0.079	G
					1.000	-0.086	0.069	P
100 seed weight						1.000	0.346 **	G
						1.000	0.328 **	P
yield per plant							1.000	G
							1.000	P

Significant at 5% level   G - Genotypic correlation coefficient
Significant at 1% level   P - Phenotypic correlation coefficient

Table 2. Direct and indirect effect as partitioned by path analysis

Characters	Number of branches per plant	Number of clusters per plant	Pod length	Pods per plant	Number of seeds per pods	100 seed weight	Genotypic correlation coefficient
Number of branches per plant	0.484	0.021	0.018	0.401	0.056	-0.679	0.301 **
Number of clusters per plant	-0.012	0.044	0.006	0.661	0.022	-0.126	0.595 **
Pod length	0.004	-0.003	-0.108	-0.207	0.649	-0.636	- 0.301 **
Pods per plant	0.311	0.561	0.023	0.969	-0.101	- 1.034	0.729
Number of seeds per pod	0.003	0.002	0.417	-0.204	0.481	-0.620	0.079
100 seed weight	0.006	-0.008	0.010	-0.290	0.093	0.721	0.346 **

coefficients (Table 1) was more, and the values of phenotypic correlations were slightly lower. This indicated that the environment did not play major role on the relationship between different traits at genotypic level. Hence, in the absence of significant environmental effect, selection based on phenotypic performance of different traits will be effective in the improvement of seed yield per plant. The traits viz., number of pods, numbers of clusters per plant, 100 seed weight and number of branches per plant exhibited significantly positive association with dependent variable i.e., yield per plant. Such a pasitive association with seed yield per plant was revealed by khan, 1988 (number of pods per plant) Yohe and Poehlman, 1975 (number of clusters per plant). Sree Rangasamy and Shanmugam, 1984 (100 seed weight) and Raut et al., (1988) (number of branches).

The inter association among these yield contributing traits were significantly positive except with 100 seed weight. Though pod length exhibited negatively significant association with the number of grains per pod. Such a correlation reveals the possibility in this crop, in selection for genotypes with more number of pods per plant, more number of clusters per plants and more number of branches per plant besides taking adequate care in length of pods. Such selection will help in isolation of genotypes for high yield.

The direct and indirect effects of different characters on seed yield per plant are presented in Table 2. Pods per plant, 100 seed weight, number of branches per plant and number of seeds per pod showed high positive direct effects on seed yield per plant. High positive indirect effects were

exhibities by the traits namely number of branches per plant and number of clusters per plant on seed yield per plant via pods per plant. While, moderate negative indirect effects were exhibited by the traits viz., 100 seed weight pod length and seed per pod on seed yield per plant. It was noticed that, the positive association of 100 seed weight yield was only due to its high positive direct effect on seed yield. Since, it's indirect effects through other traits were negative.

From the on going discussions, it was clearly noticed that, the improvement of seed yield could be achieved only through pods per plant since this trait showed high direct effect and high indirect effect with number of branches per plant and number of clusters per plant.

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