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CORRELATION AND PATH ANALYSIS IN GREENGRAM *

Yield is a complex character profoundly influenced by environment. In variety improvement programmes it is essential to know the relationship of yield with yield components. In this background the present investigation was undertaken to get information on genotypic correlation coefficients and to determine the direct and indirect effects of each component character on seed yield in greengram using path analysis.

Fifteen diverse varieties of greengram viz., PIMS-1, PIMS-4, NP-36, NP-40, Co-2, PS-10, S-8, ML-33, ML-26, ML-65, ML-12, EC-1653, Philippines, Culture-1 and T-44 were used. The experiment was laid out in RBD with 3 replications during November-January 1979-80 in College of Agriculture, Vellayani. Each plot was 2,1 m x 2.1 m in size and contained 49 plants spaced at 30 cm x 30 cm. The random plants were selected for observations on characters, viz., height (cm), number of nodes, number of branches, number of clusters and number of pods per plant, seeds per pod, pod length, 100 seed weight (g), number of days to 50% flowering and yield (g). Genotypic correlation coefficient was calculated using the formula evolved by Aljibouri *et at.* (1958). Equations evolved by wright (1921, 1934) and later elaborated by Dewey and Lu (1959) were used to partition the direct and indirect effects via other characters on yield.

From the genotypic correlation matrix (Table 1) it is clear that yield showed strong positive correlation with number of nodes per plant, number of pods per plant, plant height, number of seeds per pod, pod length, 100 seed weight and number of clusters per plant. Similar observations were made by Singh and Malhotra (1970) in greengram. But the association between yield and number of days to 50% flowering and number of branches per plant was weak and positive which is contray to the findings of Malhotra *et al.* (1974) in greengram.

Table 2 shows that seed yield is the result of number of pods per plant, 100 seed weight and number of nodes per plant as a composite variable and number of pods per plant is the major variable exercising high direct effect. Similar results were reported by Malhotra *et al.* (1974) in greengram. Number of pods per plant had the highest direct effect on yield in addition to the high indirect effects of number of clusters per plant, number of branches per plant and number of nodes per plant through it. Therefore it is recommended on the basis of present investigation that for selection of a type with high yield potential, the characters, viz., number of pods per plant, 100 seed weight, and number of nodes per plant should be given importance.

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Table 1

Genotypic correlation coefficients of yield and its components in greengram

	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9
Y	1	0.40524*	0.48045**	0.49371**	0.43063*	0.41221*	0.30661	0.38447*	0.50029**	0.34019
X1		1	0.71526**	–0.05502	0.44826*	-0,06446	-0.20560	0.45696*	0.24025	0.58013**
X2			1	-0.31545	0.87209**	–0.32814	–0.35131	0.64891**	-0.03219	0.57149**
X3				1	-0.42847*	0.89479**	0.74763**	-0.21497	0.67633**	–0.20218
X4					1	-0.42639*	-0.38016*	–0.63019**	-0.26448	0.46788*
X5						1	0.81827**	-0.17369	0.78777**	–0.23413
X6							1	-0.27081	0.67603**	0.24084
X7								1	0.09573	0.45224*
X8									1	0.12467
X9										1

Y: Yield/plant
X1: No. of seed/pod
X2: Pod length
X3: No. of pods/plant
X4: 100 seed weight
X5: Clusters/plant
X6: Branches/plant
X7: Plant height
X8: Nodes/plant
X9: Days to 50% flowering

**Significant at 1 per cent level
*Significant at 5 per cent level

Table 2

Direct and indirect effects of various characters on yield in greengram

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Total correlation
X1	-0.02719	-0.05545	-0.04795	0.37280	0.01667	0.02745	-0.01732	0.10215	0.03411	0.40524
X2	-0.01945	-0.07758	-0.27492	0.72529	0.08488	0 04631	-0.02459	-0.01368	0.03359	0.48045
X3	-0,02447	0.00149	0.87154	-0.35635	-0.23144	-0.0&983	0.00815	0.28756	-0.01188	0.49311
X4	-0.01219	-0 06766	-0.37342	0.83167	0.11029	0.05076	-0.02388	-0.11245	0.02751	0.43063
X5	0.00175	0.02545	0.77979	-0.35461	-0.25867	-0.10926	0.00658	0,33494	-0.01376	0.41221
X6	0.00559	0.02725	0,65159	-0.31616	-0,21166	-0.13353	0.01226	0.28743	-0.01416	0.30661
X7	-0.01242	-0 05034	-0.18735	0.52411	0.04492	0.03616	-0 03790	0.04070	0.02659	0.38477
X8	-O.C0653	0.00250	0.58944	-021966	-0.20377	-0.09027	-0.00362	0,42518	0.00732	0.50029
X9	-0.01577	-0.04433	-0.17620	0.38912	0.06056	-0.03216	-0 01713	0.05301	0.05879	0.34017

Residual effect: 0.435

Y: Yield/plant
X1: No. of seed/pod
X2: Pod length
X3: No. of pods/plant
X4: 100 seed weight
X5: Clusters/plant
X6: Branches/plant
X7: Plant height
X3: Nodes/plant
X9: Days to *50%* flowering

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സംഗ്രഹം

ചെറുപയറിന്റെ 15 ഇനങ്ങളിൽ rosraunl യ സഹബന്ധ പഠനങ്ങളിൽ 50% പുഷ്പിക്കുവാനുള്ള കാലദൈർഘ്യവും, പ്രതിസസ്യ ശാഖകളുടെ എണ്ണവും ഒഴിച്ചുള്ള ഏഴു സ്വഭാവങ്ങൾക്ക് വിളയുമായി ജീനവതലത്തിൽ ഉറച്ച സാർഥക സഹബന്ധം കാണപ്പെടുകയുണ്ടായി. പഥ വിശ്ലേഷണത്തിൽ ചെടികളിലെ കായ്കളുടെ എണ്ണം, മുട്ടുകളുടെ എണ്ണം, 100 മണികളുടെ തൂക്കം എന്നീ സ്വഭാവങ്ങൾ ഉല്പാദന വർദ്ധനവിന് പ്രേരകമായ മുഖ്യ ഘടകങ്ങളാണെന്ന് തെളിയുകയുണ്ടായി.

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