SHORT COMMUNICATION

Association Analysis for Quality and Yield Components in Some Indigenous Scented Rice Accessions

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Key words: Scented rice, Correlation

The estimates of correlation and association of characters are very useful in understanding the nature and magnitude of genetic variability available in the breeding programme. Grain yield in rice is a complex trait which is influenced by a number of component characters and environment directly or indirectly for the development of high yielding genotypes. Most of the scented indigenous genotypes are low yielding. Therefore, for the development of high yielding scented variety, knowledge of interrelationship among yield and its attributing traits is quite necessary. A correlation study in conjunction with path coefficient analysis provide the information about cause and effect relationship between direct pairs of variables.

The present study was conducted at research farm, Department of Plant Breeding and Genetics, Indira Gandhi Agricultural University, Raipur during *kharif* 2001. The experimental material (Table 1) for this study comprised of fifty selected traditional rice accessions along with improved aromatic varieties as checks *viz.* Pusa Basmati-1, Tarori Basmati, Indira-9, Dubraj and Madhuri-11. The experiment was conducted in randomized block design with two replications. Each genotype was grown in a 3 m long row length. The row to row and plant to plant spacing was 20 and 15 cm respectively. Five plants from each row were randomly selected and observations for characters *viz.*, plant height, panicle length, effective tillers per plant, biological yield per plant, paddy length, paddy breadth, paddy length: breadth ratio, kernel length, kernel breadth, kernel length: breadth ratio and grain yield per plant were recorded. Data were subjected to correlation coefficient analysis as per formulae given by Miller *et al.* (1958) and path coefficient analysis by Dewey and Lu (1959).

In the present correlation coefficient (Table 1) study grain yield per plant expressed a positive significant association with biological yield per plant at phenotypic, genotypic and environmental level. It expressed negative significant association with panicle length, paddy breadth and kernel breadth at genotypic level. Biological yield per plant had a significant positive association with grain yield per plant at phenotypic, genotypic and environmental level while, with paddy breadth it showed significantly negative association at genotypic level.

The positive and significant correlation of plant height was found with panicle length and biological yield per plant at phenotypic and genotypic level while, it had significant negative association with paddy length, paddy length: breadth ratio, kernel length and kernel length: breadth ratio of phenotypic and genotypic level. The number of effective tillers per plant showed a significant positive correlation at genotypic and environmental level with grain yield per plant while, it showed significant negative correlation with paddy breadth at genotypic and phenotypic levels and with kernel breadth at genotypic level. Panicle length recorded significant negative association with paddy length, paddy length: breadth ratio, kernel length and kernel length: breadth ratio at phenotypic and genotypic level.

In this study, grain yield per plant had positive association with biological yield per plant and effective tiller per plant as reported by Annadurai (2001). Effective tillers per plant had a positive association with grain yield. Similar result was reported by Basavaraja *et al.* (1997). Positive significant association of biological yield per plant with grain yield per plant in the present study was in agreement with the findings of Rao and Shrivastava (1994).

Path coefficient analysis of different characters contributing towards grain yield per plant revealed that paddy length had the highest positive direct relationship with grain yield per plant followed by paddy breadth, biological yield per plant and effective tillers per plant. Positive direct effect of various characters on grain yield observed in the present findings are in agreement with

Table 1. Genotypic (G), phenotypic (P) and environmental (E) correlation for morphological and quality traits

Characters		Effective tillers/ plant	Panicle length (mm)	Biological yield/plant	Paddy length (mm)	Paddy breadth (mm)	Paddy L:B ratio	Kernel length (mm)	Kernel breadth (mm)	Kernel L:B ratio	Grain yield/ plant
Plant height	P	0.030	0.622**	0.342*	-0.533**	0.081	-0.467**	-0.521**	0.152	-0.427**	-0.041
	G	0.046	0.658**	0.433**	-0.550**	0.088	-0.492**	-0.546**	0.143	-0.445**	-0.144
	E	-0.160	-0.032	0.146	-0.041	-0.044	-0.056	-0.005	0.268	-0.181	0.093
Effective tiller/plant	P		-0.029	0.215	-0.060	-0.298*	0.065	-0.058	-0.267	0.101	0.257
	G		-0.021	0.235	-0.065	-0.318*	0.066	-0.067	-0.296*	0.114	0.409**
	E		-0.132	0.217	0.024	-0.087	0.054	0.066	-0.013	-0.016	0.306*
Panicle length	P			-0.071	-0.418**	0.080	-0.321*	-0.416**	0.134	-0.358*	-0.251
	G			-0.085	-0.435**	0.080	-0.342*	0.441**	0.126	-0.379**	-0.491**
	E			-0.055	0.056	0.074	0.020	0.097	0.256	-0.070	-0.221
Biological yield/ plant	P				-0.051	-0.232	0.040	-0.026	-0.192	0.052	0.563**
	G				-0.063	-0.305*	0.010	-0.076	-0.267	0.054	0.652**
	E				-0.038	-0.045	0.203	0.237	0.009	0.069	0.597**
Paddy length	P					-0.063	0.838**	0.961**	-0.154	0.806**	0.065
	G					-0.071	0.873**	0.992**	-0.169	0.854**	0.150
	E					0.195	-0.034	-0.110	0.151	-0.167	0.010
Paddy breadth	P						-0.513**	-0.071	0.955**	-0.497**	-0.185
	G						-0.503**	-0.081	0.990**	-0.527**	-0.417**
	E						-0.657**	0.118	0.549**	-0.092	-0.054
Paddy L:B ratio	P							0.831**	-0.601**	0.938**	0.113
	G							0.874**	-0.600**	0.990	0.164
	E							0.029	-0.631**	0.275	0.200
Kernel length	P								-0.176	0.842**	-0.080
	G								-0.190	0.866**	0.129
	E								0.019	0.509**	0.144
Kernel breadth	P									-0.607**	-0.172
	G									-0.633**	-0.348*
	E									-0.335*	-0.107
Kermel L:B ratio	P										0.115
	G										0.220
	E										0.094

** Significant at 1% level ; * Significant at 5 % level

the findings of Surek *et al.* (1998) for biological yield per plant and Gupta *et al.* (1999) for panicles per plant.

To conclude, that the selection criteria based on effective tillers per plant, grain yield per plant and biological yield per plant can provide better result for improvement of yield. The study of path analysis indicated that the direct selection of biological yield per plant and effective tillers per plant would be used as selection criteria for improvement.

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