https://doi.org/10.29321/MAJ.10.A02170

Madras Agric. J. 74 (4-5): 208-212, April & May 1987

ASSOCIATION STUDIES FOR STABILITY PARAMETERS IN SHORT DURATION VARIETIES OF RICE *(Oryza Sativa. L.)*

S. K. GANESH and G. SOUNDARAPANDIAN

Correlation among stability parameters of ten short duration rice genotypes *(Oryza sativa L.)* was worked out. The correlation coefficients among the pooled genotype means revealed that more stress should be laid on high yield with high harvest-index and spikelet-fertititiy. The correlation coefficients among regression coefficients (bi's) and deviation from linear regression line ($S-^2di$) indicated that the stabiiity of number of ear-bearing tillers contributed for the yield stability.

Correlation studies among stability parameters provides information that could be used in the investigation of the inter-related stability performance among the traits. In the present investigation, correlation coefficient was used to find out the direct and indirect causes of trait association in rice.

MATERIALS AND METHODS

Ten short duration varieties of rice *(oryza sativa. viz. L.)* ADT 31, ADT 36, CO 37, IET 4789, IR 53, Co 33, TKM 9, Co 41, ACM 2 and ACM 3 evaluated under three environmenrs. Experimental details have eariler been described (Ganesh and Soundrapandian, 1986) based on the stability parameters *viz.*, mean(m), regression coefficient(bi) and the deviation from linear regression ($s-^2di$) the correiation analysis was carried out.

RESULTS AND DISCUSSION

The correlation coefficients among the pooled genotype means of yield and its component traits were presented in Table 1. It was shown from the table that plot yield was positively and significantly correlated with spikelet fertility and harvest-index. Other yield components were found to exert less influence on yield In the present investigation, it was found that while evaluating the suitabllity of a particular genotype, more stress should be laid on high yield with high harvest-index and spikelet-fertility. These findings were in agreement with the earlier report of Uishnoi and Jagbir Singh (1981)

Between yield components, plant height was positively and significantly correlated with panicle length. Panicle iength was positively and significantly correlated with number of filled grains per ear. These relationships in the present investigation indicated that greater stress should be laid on panicle length which indirectly influence high harvest-index.

The regression coefficient (b'is) of the plot yield was positively and significantly correlated with regression

Table 1. Correlation coefficients among the pooled genotype mean values of different traits

	Days to 50 percent flowering	Plant height	Number of ear-bearing tillers	Panicle length	Number of filled grains per ear	SpiKelet fertility	Harvest-index	Plot yield
Days to 50 percent flowering	1.000	−0.305	0.333	−0.141	−0.263	0.174	−0.165	0.314
Plant height		1.000	0.273	0.949**	0.595	−0.041	0.123	0.162
Number of earbearing tillers			1.000	0.333	−0.051	0.349	0 283	0.576
Panicle length				1.000	0.670*	0.031	0.171	0.338
Number of filled grains per ear					1.000	0.429	0,307	0.345
Spikelet-fertility						1.000	0.450	0 662*
Harvest-index							1.000	0.670*
Plot yield								1.000

* = Significant at 5 per cent level; ** = significant at 1 per cent level

Table 2. Correlation coefficients among bi's of different traits

	Days to 50 percent flowering	Plant height	Number of ear-bearing tillers	Panicle length	Number of filled grains per ear	SpiKelet fertility	Harvest-index	Plot yield
Days to 50 percent flowering	1.000	−0.062	0.569	−0.701*	−0.453	0.445	−0.777*	0.555
Plant height		1.000	−0.233	0.173	−0.014	−0.510	0.507	0.353
Number of earbearing tillers			1.000	0.015	−0.101	0.263	0.659*	0.658*
Panicle length				1.000	0.747*	0.321	0.346	0.265
Number of filled grains per ear					1.000	0.129	0.385	0.482
Spikelet-fertility						1.000	0.269	0.389
Harvest-index							1.000	0.667*
Plot yield								1.000

* = Significant at 5 per cent level; ** = significant at 1 per cent level

Table 3. Correlation coefficients among S^2 di's of different traits

	Days to 50 percent flowering	Plant height	Number of ear-bearing tillers	Panicle length	Number of filled grains per ear	SpiKelet fertility	Harvest-index	Plot yiel
Days to 50 percent flowering	1.000	−0.177	0.198	−0.305	0.534	0.359	−0.196	0.087
Plant height		1 000	−0.398	0.558	0.415	−0.329	−0.123	−0.415
Number of earbearing tillers			1.000	0.315	−0.205	0.291	0.511	0.821**
Panicle length				1.000	0.031	−0.553	−0.471	−0.367
Number of filled grains per ear					1.000	0.446	0.221	−0.075
Spikelet-fertility						1 000	0.457	0.590
Harvest-index							1.000	0.438
Plot yield								1.000

** = significant at 1 pei cent level

coefficient (bi's) of number of ear bearing tillers and harvest index (Table 2). Singh and Singh (1980) reported that the linear response (bi's) of yield was positively and significantly associated with the linear response (bi's) of tillers per plant. In the present investivation it was shown that number of ear bearing tillers and harvest-index might be stable over environments which inturn might be cnnsidered as important yield components that contributed to the yield stability of the genotypes. Moreover among yield components, the bi's of number of ear bearing tillers was positively and significantly correlated with bi's of harvest index. These finding were in agreements with the earlier reports of Mohammed Saeed and Francis (1983).

In the present investigation the correlation between the deviation from linear regression line($s^{-2}di$) of plot yield and number of ear bearing tillers was significant and positive Between the $s^{-2}di$'s of yield components, there was no significant correlation (Table 3). It was shown that the stability of number of ear bearing tillers might have contributed for the yield stability since significant positive correlation was observed between $\bar{s}^2 d$ of yieid and $\bar{s}^2 d$ of number of ear-bearing tillers. These findings were in conformity with the earlier reports of Mohammed saeed and Francis (1983).

REFERENCES

GANESH, S. K. and G. SOUNDRAPANDIAN. 1986. Stability analysis in short duration varieties of rice *(Oryza sativa L.)* (umpublushed).

MOHAMMED SAEED and C. A. FRANIS 1983. Yield stability in relation to maturity in grain solghum. *Crop Sci. 23*: 683-7.

SINGH, S. V. and R. S. BINGH. 1980. Stability of component charactets in relation with the stability of yield. *Indian J .Genet. 40*:93-8

UISHNOI, A K. and JAGBIR SINGH. 1981. Analysis of harvest-index in green gram *(Vigna radiata* (L.) wilczek). *The Andhra Agri.J. 28* : 87-8.