IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 1 Issue 9, November 2014.
www.ijiset.com
ISSN 2348 – 7968

Correlation And Path Analysis For Yield And Yield Attributes In Mid Early Group Genotypes Of Rice (*Oryza sativa* L.).

N.Lingaiah[1], V.Venkanna[2], C.Cheralu[3] and B.Satish Chandra[4]

Regional Agricultural Research Station, Warangal, Telangana State 506 007.

[1]Scientist, RARS, Warangal

Abstract: The present experiment was carried out to study correlation and path analysis studies for yield and yield contributing characters in sixty four mid early group genotypes of rice. The correlation studies revealed that the genotypic correlation were higher than the corresponding phenotypic correlations. Yield exhibited positive association with effective tillers per plant, panicle length and test weight. And negative associate on with days to 50% flowering and plant height. Path analysis indicated that panicle length, effective tillers per plant and test weight exhibited direct positive effect on yield indicating the importance of these traits during selections for improvement of yield in rice.

Key words: Rice, Correlation coefficients, path analysis

INTRODUCTIO: Yield is a complex and polygenically inherited character resulting from multiplicative interaction of its contributing characters. Both correlation and path analysis form a basis for selection and also helps in understanding those yield components affecting yield improvement through study of their direct and indirect effects. The present investigation was carried out to understand the interrelationship between yield and its contributing characters to be considered in selections for improvement of rice.

MATERIALS AND METHODS: The experiment was carried out during *kharif*, 2011 at Regional Agricultural Research Station, Warangal. The material comprised of 64 elite mid early genotypes of rice (duration of 120-130 days) sown in a simple lattice design with two replications with spacing of 20 X 15 cm. Data were recorded on five randomly selected plants in each entry in each replications for the traits days to 50% flowering, Plant height (cm), Productive

tillers/plant, Panicle length (cm), Test weight (g) and yield in kg per plot which converted into kg/ha. The data were statistically analyzed to estimate genotypic and phenotypic correlation coefficients (Sing and choudhary, 1995) and path coefficient analysis (Dewey and Lu, 1959).

ISSN 2348 – 7968

RESULTS AND DISCUSSIONS: The analysis of variance indicated significant differences among the genotypes for all the characters. Genotypic correlation coefficients in general were higher than phenotypic correlation coefficients (Table 1) indicating strong inherent association between the traits. Panicle length, effective tillers per plant (Minnie *et al.*, 2013, Basavaraja *et al.*, 2013), and test weight (Pankaj Bhatia Jain, R. K. Chowdhury, V. K. 2013) showed positive correlation with yield. Days to 50% flowering and plant height had negative association with yield.

Direct and indirect effects (phenotypic) between yield and yield contributing traits in rice presented in Table 2. Path coefficient analysis revealed that panicle length, effective tillers per plant (Minnie *et al.*, 2013, Basavaraja *et al.*, 2013, Eswara Reddy *et al.*, 2013) and test weight (Naseer Mohammad *et al.*, 2013) exhibited direct positive effect on yield. Hence, selection should be practiced for these traits in order to isolate superior plant types for improvement of grain yield.

Table 1. Estimates of phenotypic and genotypic correlation coefficients.

	Days to 50% flowering	Effective tillers/plant	Plant height (cm)	Panicle length (cm)	Test weight (g)	Yield (kg/ha)
Days to 50% flowering	1.0000	0.2051* (0.2855)	0.0223 (0.0502)	-0.0322 (-0.0136)	0.0002 (-0.0080)	-0.0301 (-0.0710)
Effective tillers/plant		1.0000	-0.1874* (-0.3693)	-0.1481 (-0.2634)	-0.0888 (0.0166)	0.0497 (0.1076)
Plant height (cm)			1.0000	0.3054*** (0.3404)	-0.0588 (-0.0733)	-0.0214 (-0.0313)
Panicle length (cm)				1.0000	0.2990*** (0.4428)	0.0498 (0.0649)
Test weight (g)					1.0000	0.0014 (-0.0245)

Figures in parenthesis are genotypic correlation coefficients * significant at 5% level *** significant at 1% level

ISSN 2348 – 7968

Table 2: Direct and indirect effects (phenotypic) between yield and yield contributing traits in rice.

	Days to 50% flowering	Effective tillers/plant	Plant height (cm)	Panicle length (cm)	Test weight (g)	Correlation with Yield (kg/ha)
Days to 50% flowering	**-0.0395**	-0.0081	-0.0009	0.0013	0.0000	**-0.0301**
Effective tillers/plant	0.0125	**0.0610**	-0.0114	-0.0090	-0.0054	**0.0497**
Plant height (cm)	-0.0023	-0.0107	**0.0221**	0.0725	0.0217	**-0.0214**
Panicle length (cm)	-0.0023	-0.0107	0.0221	**0.0725**	0.0217	**0.0498**
Test weight (g)	0.0000	0.0015	0.0010	-0.0050	**-0.0168**	**0.0014**

Bold and diagonal values are direct effects and other values are indirect effects.

REFERENCES:

Basavaraja, T. Asif, M. Mallikarjun, S. K. Gangaprasad, S. 2013.Correlation and path analysis of yield and yield attributes in local rice cultivars (*Oryza sativa* L.). *Asian Journal of Bio Science.* 8(1):36-38.

Dewey, J. R and Lu K. H. 1959. Correlation and path coefficient analysis of components of crested wheat grass seed production. *Agronomy Journal*, 51: 515-518.

Eswara Reddy, G. Suresh, B. G. Sravan, T. 2013. Correlation and path analysis for yield and yield attributes in rice (*Oryza sativa*L.) genotypes. *International Journal of Plant Sciences (Muzaffarnagar)* 8(2):391-394.

Minnie, C. M. Reddy, T. D. Raju, C. S. 2013. Correlation and path analysis for yield and its components in rice (*Oryza sativa* L.). *Journal of Research ANGRAU* 41(1):132-134.

ISSN 2348 – 7968

Naseer Mohammad, Praveen Kumar, Surendra Singh and Salil Tewari. 2013. Character Association and path coefficient analysis for productivity traits in basmati rice (*Oryza sativa* L.). *Pantnagar Journal of Research* 11(3):332-336.

Pankaj Bhatia Jain, R. K. Chowdhury, V. K. 2013.Genetic variability, correlation and path coefficient analysis for grain yield and its components in rice (*Oryza sativa* L.) genotypes. *Annals of Biology.* 29(3):282-287.

Singh, R. K and Chaudhary B. D. 1995. Biometrical methods in quantitative genetic analysis. Kalyani publishers, New Delhi, India pp. 215-218.