Internat. J. agric. Sci. Vol.3 No.1 January 2007 : 145-147

Stability analysis for grain yield and yield components in red rice

B.M. Dushyantha Kumar*, N.E. Thyagaraj, Ramachandra C. and S.L. Krishna murthy
U.A.S., Zonal Agricultural Research Station, MUDIGERE, (KARNATAKA) INDIA

ABSTRACT
Seventeen red rice genotypes were evaluated for the stability of yield and yield components by growing them in kharif season during 2002-04 at ZARS, Mudigere, Karnataka. Significant differences among the genotypes and environments suggested the presence of wide variability. Both the components of genotypes x environment interaction were significant, indicating that the major portion of interaction was linear in nature and prediction over the environments was possible. Based on the stability parameters, red rice genotypes doddabatta, jaddu batta, kemphasadi and natibatta exhibited higher mean grain yield, regression coefficient near unity and deviation from regression low. These varieties could be recommended for commercial cultivation in this region (Zone – 9).

Key words : Local red rice, Stability Analysis, Genotype, Environment interaction.

INTRODUCTION

Rice is predominantly grown in hill zone of Karnataka during wet season (kharif). The assured rainfall during kharif makes this crop to grown in this area as rainfed crop. Because of the undulations, paddy is being grown in uplands, midlands and low lands. Out of cultivated area of about 3.6 lakh ha paddy occupies an area of 2.8 lakh ha. More than 30 per cent of the area is sown in traditional local varieties because of local preference for some special qualities. A farmer prefers local red rice varieties because of its high market price and par boiling purpose. Thus, the present study was conducted to assess to seventeen local red rice genotypes for their yield stability over the environments.

MATERIALS AND METHODS

Seventeen red rice genotypes viz., Biliya, Doddabatta, Doddi, Doddiga, Halugidda selection, Jaddubatta, Kaggari kirwana, Kemphasadi, Kempusannakki, Kesari, Kirwana, Masale Puttabatta , Mattalaga, Nati batta, Nereguli, Pankaj were evaluated at ZARS, Mudigere, Karnataka during kharif over three years from 2002 to 2004 using a randomized block design with three replications. Twenty six day old seedlings were transplanted at a spacing of 20 x 15 cm in 2.2 x 1.2 m plots. All the recommended cultural practices were followed for raising a normal crop. Observations on days to 50 per cent flowering, plant height, panicle number, panicle length and grain yield were recorded from randomly selected five plants in each replication at maturity. The mean values for all the traits across the years were subjected to stability analysis (Eberhart and Russel, 1966).

RESULTS AND DISCUSSION

The pooled analysis of variance over the three years showed that the Genotype (G) and environment (E) differences tested against the G x E interactions were for all the traits studies (Table 1), indicating the presence of wide variability among the genotypes and environments.

Table 1: Analysis of variance for stability performance for Grain yield and other important traits in rice

Sources	DF	Mean sum of squares				
		Days to 50% flowering	Plant height (cm)	Panicle No.	Panicle length (cm)	Grain yield (t/ha)
Varieties	15	99.7234^{aa}	232.2703^{aa}	0.06949^{aa}	3.8196^{aa}	0.07515^{aa}
Environments	2	81.1047^{aa}	728.9180^{aa}	0.91154^{aa}	1.4471^{aa}	0.09538^{aa}
Variety x environments	30	5.7840^{xx}	37.2437^{xx}	0.03713^{NS}	1.2484^{xx}	0.01342^{NS}
Total	47					
Pooled error	90	1.6164	4.6959	0.2535	0.3854	0.03318
Env + (Var x Env)	32	10.4915^{++}	80.5359^{++}	0.09178^{+}	1.2608^{NS}	0.01854^{NS}
Env (Linear)	1	162.3761^{++}	1459.7059^{++}	1.82292^{++}	2.8905^{NS}	0.19081^{++}
Var x env (Linear)	15	8.1330^{+}	68.6378^{++}	0.02861^{NS}	1.2173^{NS}	0.01341^{NS}
Pooled deviation	16	3.2098^{xx}	5.4922^{xx}	0.04280^{NS}	1.1998^{xx}	0.01259^{NS}

a and aa Significant at P=0.05 and P=0.01 respectively when tested against the G x E interaction.
+ and ++ Significant at P=0.05 and P=0.01 respectively when tested against pooled deviation.
* and ** Significant at P=0.05 and P=0.01 respectively when tested against pooled error.

* Author for corrospondence.