RESEARCH PAPER

Use of parametric and non-parametric stability indices for selection of high yielding stable lowland rice genotypes

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Abstract : Twenty two rainfed lowland rice genotypes were evaluated at five locations in Eastern India to identify stable and high yielding genotypes. The experiment was conducted using Randomized Complete Block Design with three replications. Combined analysis of variance showed highly significant differences among genotypes, environments and genotype by environment interactions for grain yield. The additive main effects and multiplicative interaction (AMMI) analysis of variance indicated that the genotype-by-environment interaction sum of squares was about 5 times larger than that for genotypes, which determined substantial differences in genotypic response across environments. The presence of genotype-by-environment interaction was clearly demonstrated by the AMMI model, when the interaction was partitioned among the first three interaction principal component axis (IPCA) which cumulatively captured 97.73 per cent of the total GEI. In this study, environments (testing locations) fell into three sections, where most of the tested genotypes showed specificity. AMMI stability value discriminated genotypes 17 and 18 as the stable genotypes based on YSI (yield stability index) and the RS (rank sum).

Key Words : Additive main effects and multiplicative interaction, Rice, Stability, Genotype-by-environment interaction

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