Heritability and Diversity Analysis of Blast Resistant Upland Rice Genotypes Based on Quantitative Traits

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Abstract : Rice is a staple crop of economic importance of most Asian people, and blast is the major constraints for its higher yield. Heritability of plants traits helps plant breeders to make an appropriate selection and to assess the magnitude of genetic improvement through hybridization. Diversity of crop plants is necessary to manage the continuing genetic erosion and address the issues of genetic conservation for successfully meet the future food requirements. Therefore, an experiment was conducted to estimate heritability and to determine the diversity of 27 blast resistant upland rice genotypes based on 18 quantitative traits using randomized complete block design. Heritability value was found to vary from 38 to 93%. The lowest heritability belonged to the character total number of tillers/plant (38%). In contrast, number of filled grains/panicle, and yield/plant (g) was recorded for their highest heritability value viz. 93 and 91% correspondingly. Cluster analysis based on 18 traits grouped 27 rice genotypes into six clusters. Cluster I was the biggest, which comprised 17 genotypes, accounted for about 62.96% of total population. The multivariate analysis suggested that the genotype 'Chokoto 14' could be hybridized with 'IR 5533-55-1-11' and 'IR 5533-PP 854-1' for broadening the gene pool of blast resistant upland rice germplasms for yield and other favorable characters.

Keywords : blast resistant, diversity analysis, heritability, upland rice

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