Evaluation of inherited resistance genes of bacterial leaf blight, blast and drought tolerance in improved rice lines

ABSTRACT

Improved rice lines were developed frome three parents with the resistance or tolerance to bacterial leaf blight, blast and drought stress, respectively, using single-, double- and three-way crosses. The improved lines were assessed for agro-morphological and yield traits under non-drought stress (NS) and reproductive-stage drought stress (RS) treatments. The mean comparison of traits measured between parent plants and progenies (improved lines) were similar, and there were significant and non-significant differences among the parents and improved lines (genotypes) under NS and RS. Smilarly, there was significant and non-significant differences in the interaction among both parent varieties and improved lines for NS and RS. Cluster and 3D-model of principal component analysis did not generate categorical clusters according to crossing methods, and there were no exclusive crossing method inclined variations under the treatments. The improved lines were high-yielding, disease resistant, and drought-tolerant compared with their parents. All the crossing methods were good for this crop improvement program without preference to any, despite the number of genes introgressed.

Keyword: Rice; Bacteria leaf blight; Blast; Drought tolerance; Resistance gene