Marker-assisted Selection for Incorporating Bacterial Blight Resistance Genes in the Segregating Generation of Rice Variety CO 43

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Abstract: A popular rice variety of South India, CO 43 is tolerant to high salinity and alkalinity stress but is susceptible to bacterial blight. In the present study, gene-based molecular markers were used for the foreground selection of bacterial blight disease resistance genes *Xa21* and *xa13* in an inter cross F_3 generation of CO 43. B95-1 X Tetep and B95-1 X Abhaya were used as the donors for *Xa21* and *xa13* genes. Two-hundred and ten plants of the inter cross F_3 generation were genotyped for the two genes. Eleven plants having both the genes in homozygous condition were selected and advanced to F_4 generation for disease screening and agronomic evaluation. All the selected lines recorded a high level of resistance against bacterial blight. Agro-morphological evaluation of the inter cross F_4 lines led to the identification of two lines 59-44 and 59-62 which were superior to CO 43 with respect to both agronomic performance and disease resistance. The selected inter cross F_4 lines will be screened for disease resistance under field conditions and subsequently advanced for yield trials.

Keywords: Bacterial blight, CO 43, Disease resistance, Molecular markers, Rice