

# MULTITRAIT INTROGRESSION FOR RESISTANCE TO BACTERIAL BLIGHT, BROWN PLANTHOPPER IN THE GENETIC BACKGROUND OF QUALITY RICE VARIETY, BAC THOM 7 BY USING MARKER ASSISTED BACK CROSSING (MABC)

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## Summary

Bacterial Blight (BB) and Brown Planthopper (BPH) caused by *Xanthomonas oryzae* pv. *oryzae* (Xoo) and *Nilaparvata lugens* Stål, respectively, are the most destructive disease and insect causing significant reduction in rice production. The marker-assisted back crossing (MABC) technique is typically used to improve disease and insect resistance for rice. The use of broad-spectrum resistance genes, integrating major resistance genes into quality rice varieties, is a strategy to prevent or delay the breakdown of resistance of rice cultivars. In this study, multitrait introgression is attempted to combine two desirable traits (BB and BPH resistance) into a genetic background of quality rice variety, Bac Thom 7. The single-trait resistant lines were developed by MABC method, and the crossing among single-trait resistant lines to obtain multitrait introgression lines which carried multiple resistance genes. In each stage of backcrossing, foreground selection was carried out for the target resistance genes (*xa5*, *Xa7*, *Bph20* and *Bph21*), using linked markers, while background selection was done using a set of 52 and 56 parental polymorphic SSR markers respectively. The results have been obtained 03 elite lines, N2.3.38.39, N2.3.55.76 and N2.3.64.18, carried 4 resistance genes *xa5*, *Xa7*, *Bph20* and *Bph21*, which shown resistance to BB and BPH in artificial infection, and carried the agro-biological characteristics similar to the original cultivar, BT7. Line N2.3.38.39, named AGI-4, was conducted for author tests, production trials and sent for national basic testing in the spring crop of 2020.

**Keywords:** *Bacterial blight, multitrait introgression, multiple resistance genes, MABC, brown planthopper.*