

Category	: International Rice Research Conference
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Keyword 1	: Marker-assisted selection
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Title of Entry	: Performances of resistant gene introgressed lines against rice blast disease in Multi environment test
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Rice blast disease, caused by <i>Magnaporthe oryzae</i> , is a major constraint for sustainable rice production. It can cause severe loss in yield to the extent of 70-80% in various rice ecosystems. The fungus attacks aerial parts of the rice plant at any stage of plant growth through the production of lesions on the leaves, nodes and panicles. Though chemical control is successful, it adds to the cost of cultivation and also contaminates the environment. Development and deployment of resistant variety offers the best alternative for economical and safe management of the disease. To date, around 100 blast resistance genes have been identified, and many of them have been cloned and characterized. Under present study several donors were evaluated against rice blast disease among them the C101LAC, C101A51 and Tetep carrying genes like Pi-1, Pi-2 and Pi-54 respectively used as donors. These genes were introgressed into agronomically superior varieties like BPT 5204, Swarna and Improved Samba Mahsuri through marker assisted back cross method of breeding by using molecular markers like RM 224 (Pi-1), RM 527, 1MSM, AP 5659-5 (Pi-2), RM206 and Pi-54 MAS (Pi-54). Differential response to disease was observed. All these introgressed lines in different backgrounds exhibited higher resistance than elite cultivars. Among the gene introgressed lines tested under hot spot locations at multi environments, lines with gene combinations Pi-1 + Pi-2 + Pi-54 and Pi-1 + Pi-54 were highly resistant to blast disease than those with single genes. Some of the lines were better than the parents in yield with inbuilt resistance to Bacterial blight, Sheath rot and Brown spot. Variation in resistance reaction was observed for the same gene when it acts alone or in combinations and

also when the same genes were present in different genetic backgrounds. The gene pyramided lines developed in this study can serve as excellent donors for blast resistance in rice improvement.

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