

Category	: 8th Rice Genetics Symposium
Select Theme	: Genes for Hybrid Rice
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Genes for Hybrid Rice Keyword 1	: Restorer
Genes for Hybrid Rice Keyword 2	: CGMS
Genes for Hybrid Rice Keyword 3	: fertilization
Title of Entry	: Development of hybrids utilizing improved restorer line KMR-3R of Rice for Salt and Submergence tolerance – A Marker Assisted Backcross Breeding Approach
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Abstract : The expeditious increase in the population, among major rice growing areas of Asian sub-continent is in the dire need of ample food requirement. The yield and production of rice are being led down by various factors among which abiotic stresses like salinity and submergence are among the top causes. Hybrid Rice is proven and practical technique which enhances production and productivity where more than 100 rice hybrids in India are developed till date. Considering hybrid rice a promising solution for the demands of the food supply, improving parental lines of rice for salinity and submergence tolerance would be an outbreak and worthwhile. A marker-assisted backcross breeding approach will be a useful technology for genetically improving the parental line, KMR-3R a stable restorer line of the popular Indian rice hybrid, KRH2. The major QTL for salt tolerance Saltol 1 (FL-478) and Sub 1 (swarna sub 1) for submergence tolerance were used as donor and KMR-3R as the recurrent parent. At each generation foreground and background, selection was done along with the Saltol 1 and Sub1A QTL/genes .at genome level and phenotypical characters were also considered. The BILs were also screened for their physiological approach of tolerance at vegetative state in tray screening method with the modified Yoshida-NaCl method for salinity tolerance; similarly, the extent of submergence tolerance was carried out in GI tanks by keeping the seedlings for under submerged conditions for 14 days. The tolerant lines were further confirmed of Rf4 & Rf3 and tolerant genes individually and further crossed with four CMS lines for the observation of combining ability and fertility restoration. The derived hybrids have tolerance to salinity and submergence with better yield in comparison with KRH2 hybrid. The MABC of improving a parental line of rice is for salinity and submergence tolerance individually, i:

the first of its kind of research in India, and if a hybrid can be produced from the current investigation it would be a major breakthrough and a model system for inducing desirable traits into different parental lines and tolerant hybrids for unfavorable ecology.

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