

FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



Contribution ID: 8

Type: Poster

GENETIC DIVERSITY AND MOLECULAR CHARACTERIZATION OF XA-5 AND XA-21 IN AROMATIC RICE MUTANT LINES DERIVED FROM IRRADIATED GAMMA RAYS

Abstract

Molecular characterization of aromatic rice mutant lines used primer 16PFXa, RM122, and pTA248 linked to Xa1, xa5 and Xa21 resistance gene respectively. These primers have been used for Polymerase Chain Reaction (PCR) for identification of DNA fragment and sequences related to *Xanthomonas oryzae pv oryzae* (Xoo) resistance in rice. Single DNA fragment linked to Xa1 and xa5 in aromatic rice mutant lines and checked susceptible variety of TN1 was found with size 0.375 kb and 0.2 kb for primer respectively, while 0.6 kb of DNA fragments related to Xa21 was found in aromatic rice mutant lines, and 0.7 kb at TN1 and IR64 cultivars. Alteration of nucleotide sequences from each of DNA fragment on rice mutant lines, Sintanur (wildtype), and TN1 cultivars as checked for sensitive varieties to Bacterial Leaf Blight (BLB) were analyzed. DNA fragments derived from PCR products with primer RM122 and pTA248 were taken for DNA sequencing analysis. Results of nucleotides sequences analysis derived from each of DNA fragment of aromatic rice mutant lines (AR.1020 and AR.1030) and Sintanur cultivar (wildtype) were compared. Results showed that point mutation occurred on aromatic rice mutant lines based on comparison with Sintanur cultivar. These mutation at aromatic mutant lines showed as gamma rays effect hit genomic DNA of AR.1020 and AR.1030 and created nucleotides polymorphism. Based on of Blastn analysis software showed that DNA fragment linked to xa5 located at chromosomes 5, while DNA fragment linked to Xa21 at chromosomes 11. Approximately 30 percent of DNA sequences of these DNA fragment was similar with predicted sequences of receptor kinase-2

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Track Classification: Mutation breeding for adaptation to climate change in seed propagated crops