

Salt tolerant-BR11 and Salt tolerant-BR28 through Marker Assisted Backcrossing (MAB)

Suhaila Rahman¹, Taslima Haque¹, M. Sazzadur Rahman² and Zeba I. Seraj¹.

¹Department of Biochemistry and Molecular Biology, University of Dhaka

²Bangladesh Rice Research Institute (BRRI), Gazipur, Dhaka

Email of Authors: rahmansuhaila@yahoo.com¹, tahia_du03@yahoo.com¹, sazzad_73@yahoo.com² and corresponding author: zebai@univdhaka.edu¹

Marker Assisted Backcrossing (MAB) has been adopted to improve the power and efficiency of breeding programs. MAB approach is the most successful breeding technique for getting desirable genetic gains even over the more complex traits in the shortest possible time, e.g. Swarna *Sub1*. MAB can reduce the number of generations during crossing thus decreasing the time and labor compared to conventional breeding. 'Saltol', a major QTL at the short arm of chromosome 1 of rice was mapped in our lab from 11.2 to 12.79 Mb. One of the simplest forms of MAB is the use of molecular markers to improve the conventional backcross conversion method, where the desired trait is transferred to another line through crossing followed by repeated backcrossing to the recurrent parent to reconstitute the original variety.

MAB strategy was therefore under taken to introgress the 'Saltol' QTL into the widely accepted two mega rice varieties BR11 (T. Aman, monsoon) and BR28 (Boro, dry, winter). For 'Saltol' QTL introgression crossing was done with the donor parent FL378, a near isogenic line (NIL) which was derived from Pokkali (a salt tolerant donor variety) and repeated backcrossing was done with high yielding varieties BR11 or BR28. Three step selections i.e. Foreground, Recombinant and Background were performed in each backcross population. Four markers were found significantly associated with the trait by fine mapping of the 'Saltol' QTL region. These markers were used to locate the QTL in the backcross population. Similarly two flanking markers were used to delineate the QTL and reduce negative linkage drag. For the BR11 program, two double recombinants and 136 single recombinants were selected by genotyping of 342 BC₂F₁ population using 3 foreground and 2 recombinant markers. Background screening was done with 75 SSR markers and the percentage of recurrent parent genotype (RPG) was found from the range of 65.33% to 80%. For the improvement of BR28 variety, a total population of >13000 BC₁F₁ were developed for the introgression of 'Saltol'. The BR28 introgression program will be also progressed as above BR11 introgression program and the final plants will be selected after field trial. It is expected that farmer popular salt-tolerant BR11 and salt-tolerant BR28 will ready in our hands to give farmers by late 2009 and early 2010 respectively. After releasing of these two salt tolerant mega varieties, it will be very easier for farmers to produce salt tolerant-high yielding rice which will be more beneficial.