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Stacking of wide compatibility (WC) and elongated uppermost internode (EUI) traits in IR58025B, a maintainer line of rice by marker assisted introgression

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Wide compatibility (WC) is a dominant trait and the WC gene plays crucial role in overcoming hybrid sterility between *indica/japonica*. One of the major WC allele ($S5^n$) was mapped to chromosome 6. In the present study, we transferred S5n allele from Dular (*Aus indica*) into IR58025eB, a maintainer line having elongated uppermost internode (EUI) trait by marker- assisted backcrossing. The EUI trait serves as a genetic alternative to GA3 sprays, as EUI line possess higher percentage of panicle exsertion, thus minimizing the application of GA3 during seed production. The eui gene, which is mapped on chromosome 5, is recessive in nature. Considering the efficacy of Simple Sequence Repeat (SSR) markers, a set of SSRs viz., RM7446, RM7801, RM5970 and RM6054, flanking the eui locus and tightly linked with EUI trait, were used. Also, PCR-based STS markers S5-Indel and BF-S5 were used for selection of lines with S5n allele. Parental polymorphism survey carried out with 483 SSRs across the genome, among which 249 (51.55%) were polymorphic. On the basis of their chromosomal position, 88 markers were used for assessing BC_1F_1, BC_2F_1 and BC_3F_1 generations, with selected plants having genome recovery percentage in the range of 71-86, 81-95 and 89-98, respectively. We selected fourteen plants in BC_3F_1, with desired phenotypic and genetic background and these plants were used to develop BC_3F_2 population and the best four families would be forwarded further. Molecular stacking of WC gene in IR58025eB would enable their transfer into A line, thus enabling better exploitation of indica/japonica heterosis.

Biography

Rahul Priyadarshi is pursuing his PhD in Genetics from Osmania University, Hyderabad and MSc Biotechnology from Assam University, Silchar. He has published four research papers and seven abstracts.

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