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Introgression of stigma exertion trait into IR58025B, an elite maintainer line of rice (*Oryza sativa* L.)

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Stigma exertion (SE) is one of the most important floral traits and helps improve the outcrossing potential in rice, as Exserted stigma remains viable upto 6 days. Quantitative in nature, the SE trait is highly heritable, with large additive effect. The present study is focused on the transfer of SE trait from BF-16B (90% total SE) into IR58025B (35% total SE). IR58025B is a popular wild-abortive elite maintainer line of rice and is extensively used in hybrid rice breeding. We carried out parental polymorphism with 463 markers covering the entire rice genome, of which 113 (24.40%) were found to be polymorphic. Further, 63 polymorphic markers distributed across the 12 chromosomes were used for background selection. The reported SE markers didn't validate in our backcross population, and so we visually selected plants with total SE in the range of 65-80% in BC1F1 and 68-81% in BC2F1. Following this, plants having genome recovery in the range of 74-84% in BC1F1 and 75-90% in BC2F1 population were selected to be taken further. A total of fourteen BC2F1 plants with desired phenotypic and genetic characteristics were forwarded to BC3F1 generation. Development of a maternal parent with high SE is expected to not only increase the opportunity for pollination, but to also overcome the pollination barrier caused by differences in the flowering time or date between the parents. Thus, the improved IR58025B line would be utilized for developing a line with SE trait which would prove to be significantly useful in hybrid rice breeding programs.

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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