

Transfer of Lysozyme Gene into indica Parents of Hybrid Rice by Backcrossing [PDF]

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摘要: A lysozyme gene resistant to rice blast was transferred from the donor transgenic japonica rice Zhonghua 9 (D2-1-2) into a sterile line Pei' ai 64S(PA 64S) and restorer line 9311 of the two-line hybrid rice Liangyoupeijiu, and the restorer line Minghui 63 (MH 63) of three-line hybrid rice Shanyou 63 by successive backcrossing. The PCR analysis confirmed that foreign lysozyme gene was segregated at ratio of 1:1 in backcross generations of B39311, B3MH63 and B2PA64S, and at ratio of 3:1 in selfed generations of B2F2 9311, B2F2 MH63 and B1F2 PA64S, indicating that the foreign gene was stably inherited over successive generations as a dominant single copy gene. The resistance against rice blast in backcross or selfed generations and corresponding testcross combinations were investigated in 2003 and 2004. The results showed that the resistance of the transgenic rice to blast had a greater improvement than that of the corresponding recurrent parents or the corresponding check hybrid combinations. The resistance of the advanced backcross and selfed generations to rice blast is much stronger than that of the early generations. The study confirmed that transferring the lysozyme gene into hybrid parents by backcrossing was a simple and effective approach to develop new hybrid rice resistant to rice blast.

关键词: hybrid rice; lysozyme gene; rice blast; backcrossing; breeding

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