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研究论文

以丽江新团黑谷为遗传背景的抗稻瘟病基因累加系的选育及其抗性鉴定

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摘要 以丽江新团黑谷（LTH）近等基因系为亲本，构建了3个F_6重组自交系群体，以具鉴别能力的菌株进行抗稻瘟病筛选，共获得3组携带两个抗病基因的累加系5个，即：1) F-Kpib-3（*Pi-k^p/Pi-b*），F-Kpib-6（*Pi-k^p/Pi-b*）；2) F-Kita^2-7（*Pi-k/Pi-ta^2*），F-Kita^2-9（*Pi-k/Pi-ta^2*）；3) F-Kmita（*Pi-km/Pi-ta*）。基因组成相同的累加系抗性相同，它们的抗病频率均高于相应的近等单基因系，3组抗病频率分别达100.0%、91.7%和50.0%。这些累加系可用于稻瘟病菌致病型鉴定、田间稻瘟病菌致病性变异监测和作为抗病亲本用于抗病育种。

关键词 丽江新团黑谷 近等基因系 累加系 抗瘟性

分类号

Breeding and Blast Resistance Identification of Lijiangxintuanheigu Near-isogenic Pyramid Lines

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Abstract Rice blast is one of the most widespread and devastating diseases worldwide. Pyramiding more rice blast resistance gene into one rice variety is economic and effective approach for improvement of rice variety with durable resistance to blast. It can slow the directional evolution of *Magnaporthe grisea* and prolong the service life of resistance variety. In this study, three F6 recombinant inbred populations were made using Lijiangxintuanheigu (LTH) near-isogenic lines (NILs) as parents. By means of resistance test with differential isolates, five pyramid lines carrying two resistance genes were obtained: 1) F-Kpib-3 and F-Kpib-6 for resistance genes *Pi-k^p/Pi-b*; 2) F-Kita^2-7 and F-Kita^2-9 for *Pi-k/Pi-ta^2* and 3) F-Kmita for *Pi-km/Pi-ta*. The lines with the same gene combination had the same resistance reactions and higher resistance frequencies than the LTH NILs. The resistance frequencies were 100.0%, 91.7% and 50.0% for the above three groups, respectively. And also their disease scores were lower than the LTH NILs’. This implies that gene pyramiding could increase the spectrum and the strength of resistance to blast pathogen. The pyramiding genes are a simply additive relationship. The pyramid lines with LTH background may be used for identifying pathogenic types and monitoring variation directions of M. grisea in the field and used as resistant parents for blast resistance breeding of rice.

Key words LTH Near-isogenic line Pyramid line Blast resistance

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