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研究论文

小麦抗白粉病基因聚合体DH材料的分子标记鉴定

罗瑛皓,陈新民,夏兰芹,陈孝,何中虎,任正隆

中国农业科学院作物育种栽培研究所，国家小麦改良中心，北京100081

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摘要 小麦白粉病是由Blumeria graminis f.sp. tritici引起的世界性病害，利用分子标记辅助选择进行抗白粉病基因累加，可延长品种抗病性寿命，有利于提高育种效率。本研究利用Pm4b的STS-PCR标记，Pm13和PmV的SCAR-PCR标记，以及与Pm12共分离的同功酶标记（α-Amy-1）对来自小麦与玉米杂交产生的双单倍体材料的7个株系和9个穗系的49个随机单株进行检测。分别筛选出含有Pm12+Pm4b+PmV和Pm13+Pm4b+PmV 3个抗病基因的植株7个和1个，含有Pm12+Pm4b、Pm4b+PmV、Pm12+PmV和Pm13+Pm4b 2个抗病基因的植株3个、6个、2个和2个。利用小麦与玉米杂交方法创造多基因聚合体DH材料时，通过诱导愈伤组织，可产生更多不同基因类型的聚合体。

关键词 小麦白粉病 双单倍体 分子标记 辅助选择 基因累加

分类号 S512

Molecular Marker-Assisted Selection of DH Plants Conferring Genes Resistant to Powdery Mildew in Wheat (Triticum aestivum L.)

LUO Ying-Hao,CHEN Xin-Min,XIA Lan-Qin,CHEN Xiao,HE Zhong-Hu,REN Zheng-Long

National Wheat Improvement Center, Institute of Crop Breeding and Cultivation, Chinese Academy of Agriculture Sciences, Beijing 100081

Abstract Powdery mildew, caused by Blumeria graminis f. sp. tritici, is one of the most destructive wheat diseases worldwide. Using molecular markers to pyramid more effective resistance genes is one way to sustain the resistance of wheat cultivars. The objective of this study was to identify the resistance gene pyramided in DH plants by molecular markers. A total of 49 DH plants derived from wheat × maize crosses and potentially containing the multiple resistant genes was tested by the STS-PCR marker of Pm4b, SCAR-PCR marker of Pm13 & PmV, and the α-amylase isoenzyme marker of Pm12. The results showed that seven plants conferred with Pm4b+ Pm12+ PmV, one plant with Pm4b+ Pm13+ PmV, three plants with Pm12+ Pm4b, six plants with Pm4b+PmV, two plants with Pm12+PmV, two plants with Pm13+ Pm4b, respectively (Table 1). When using wheat × maize crosses to produce resistance gene pyramided DH plants, it could produce more pyramided DH types through callus inducing.

Key words Common Wheat Powdery mildew Doubled haploid (DH) Molecular marker assisted selection Pyramid resistance gene

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通讯作者 陈新民 chenxm@mail.caas.net.cn