

研究论文

应用分子标记研究水稻根系形态特征数量性状位点

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摘要 通过水培试验测定水稻F3群体(Palawan×IR42)137株系的幼苗根体积、根表面积、相对根粗、最大根长和根数等根系形态特征。借助由该组合的F2群体所构建的RFLP标记连锁图, 通过方差分析检测与根系形态特征表型值相关连的分子标记位点, 共测得7个标记位点分别与3个表型性状关连。其中位于2号染色体上的2对连锁标记位点RG139与RZ742及RG171与RG544跟根体积关连;位于5号染色体上的标记位点CD0105与相对根粗关连;2号染色体上的标记位点RG139及5号染色体上的1对连锁标记位点RG229与RG13跟最大根长关连。这些标记位点对关联的表型性状都具有显著的加性效应。

关键词 [水稻](#) [根系形态特征](#) [数量性状位点](#)

分类号

QTLs for Rice Root Morphological Characters

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Abstract One hundred and thirty seven F3 families developed from an F2 population derived from a cross between a japonica variety, Palawan and an indica variety, IR42 were used in a solution experiment to investigate the root morphological characters including root volume(RV), root surface area(RSA), relative root thickness(RRT), maximum root length(MRL) and root number (RN). One hundred and four molecular markers mapped on all 12 chromosomes based on the F2 population were used to detect markers associated with the variations in the root characters. Two linked marker loci RZ724 and RG139 on chromosome 2 were detected to be significantly associated with both RV and MRL; the variations in RV and MRL were also significantly associated with two linked marker loci RG171 and RG544 on chromosome 2, and with marker loci RG13 and RG229 on chromosome 5, respectively. Only one marker locus CD0105 on chromosome 5 was found to be significantly associated with RRT. Mean comparisons between different marker genotypes at the loci detected indicate significant additive effects on the three root characters. No marker loci were found to be significantly associated with other two characters in this case.

Key words [Oryza sativa L.](#) [Root morphological characters](#) [QTLs](#)

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