

结球甘蓝耐裂球性状遗传分析

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Genetic Analysis of Head-splitting Resistance Traits in Cabbage

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摘要 以结球甘蓝 ‘79-156’ 和 ‘96-100’ 为亲本配制的6 个联合世代 (P1、P2、F1、B1、B2、F2) 群体为试材, 采用主基因+ 多基因混合遗传模型对耐裂球性状进行了遗传分析。两年结果均表明, 耐裂球性状的最适遗传模型为E-O 模型, 即两对加性-显性-上位性主基因+ 加性-显性-上位性多基因控制。两对主基因均以加性效应为主, 且存在明显的互作效应。2010 年该组合B1、B2、F2 分离群体的主基因遗传率分别为67.3%、1.4%和59.1%, 多基因遗传率分别为0、56.2%和0, 遗传变异平均值占表型变异的60.9%, 环境变异平均值占表型变异的39.1%; 2011 年该组合B1、B2、F2 分离群体的主基因遗传率分别为85.5%、22.3%和84%, 多基因遗传率分别为0、24.3%和0, 遗传变异平均值占表型变异的63.9%, 环境变异平均值占表型变异的36.1%。表明该性状以主基因遗传为主, 同时受环境影响较大, 应在早期世代进行选择, B1、F2 主基因选择效率较高

关键词: 结球甘蓝 耐裂球 主基因+ 多基因 遗传分析

Abstract: Six generations (P1, P2, F1, B1, B2 and F2) derived from the cabbage parents of ‘79-156’ and ‘96-100’ were used to investigate the inheritance of head-splitting resistance trait in cabbage (*Brassica oleracea* L.var. *capitata* L.) by using mixed major gene plus polygene inheritance mode. The results showed that the head-splitting resistance trait was controlled by two additive-dominant-epitasis major genes plus additive-dominant-epitasis polygenes (E-O model) in the joint analysis of the six generations. At the same time, the additive effect for the two major genes was foremost while there was some interaction effect between them. In 2010, the major genes, heritability of B1, B2 and F2 were estimated to be 67.3%, 1.4% and 59.1%, respectively, the heritability of polygenes were 0, 56.2% and 0, the variance of the environment and genes variance accounted for 39.1% and 60.9% of the phenotypic variance in each population respectively. In 2011, the major genes, heritability of B1, B2 and F2 were estimated to be 85.5%, 22.3% and 84% while the heritability of polygenes were 0, 24.3% and 0, the variance of environment and genes accounted for 39.1% and 60.9% of the phenotypic variance in each population individually. It indicated that the trait of resistance to head-splitting in cabbage was dominated by major genes although the environmental factors had a great effect on it. In practical breeding, higher heritability of major genes can be favorable to an efficient selection in early generation of F2 and B1 for resistance to head-splitting in cabbage .

Keywords: cabbage, resistance to head-splitting, major gene plus polygene, genetic analysis

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