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陆地棉低酚棉种子品质性状的遗传及其杂种优势利用的研究

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摘要　通过配制4个隐性无腺体品系（gl2gl2gl3gl3）作母本与5个显性无腺体品系（Gle2Gle2Gl3Gl3）杂交产生的20个组合的F2、F3，利用二倍体种子遗传模型，研究了棉花种子的含油量、蛋白质含量、油分指数、蛋白质指数等5个种子性状的遗传变异。结果表明所有研究的性状主要由加性遗传效应所控制，其中含油量主要由母体加性遗传效应所控。按群体平均数计算，这些性状F2的中亲优势仅为－1.99%～1.11%，这揭示出F2、F3近交衰退很少。有75%的F2和60%的F3天然授粉异交组合棉酚含量低于0.4g/kg，因此有可能筛选出棉酚含量低于规定标准、而种子品质不降低、可综合利用的F2高产杂交种。

关键词　无腺体　陆地棉　棉酚含量　杂种优势　遗传　种子品质

分类号

Study on Relationships Between Seven Microsatellite Loci and Somatic Cell Score in Beijing Holstein Cows

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Abstract

Genetic variation of seven microsatellite loci BM1818, BM1258, BM1443, BM1905, BM302, BM4505 and CYP21 which were closely linked to somatic cell score (SCS) was analyzed in 240 Beijing Holstein cows with nondenaturing polyacrylamide gel electrophoresis. Allele frequencies, heterozygosity, polymorphic information content, the effective number of alleles of seven microsatellite loci were calculated. Relationships between seven microsatellite loci and somatic cell score in Beijing Holstein cows were primarily analyzed by least squares linear model. Least squares means of SCS for BM1818 (284 bp/284 bp), BM1258 (106 bp/92 bp), BM1443 (166 bp/160 bp), BM1905 (187 bp/187 bp), BM302 (142 bp/140 bp), BM4505 (240 bp/236 bp) and CYP21 (215 bp/198 bp) were lower, and these genotypes were the most favorable genotypes in respective locus for mastitis resistance. Least squares means of SCS for BM1818 (286 bp/286 bp), BM1258 (102 bp/102 bp), BM1443 (170 bp/160 bp), BM1905 (197 bp/195 bp), BM302 (154 bp/145 bp), BM4505 (240 bp/238 bp) and CYP21 (204 bp/192 bp) were higher, and these genotypes were the most unfavorable genotypes in respective locus for mastitis resistance. The information found in the present study is very important for improving mastitis resistance in dairy cattle by marker assisted selection.

Key words

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