

研究论文

高产棉花品种泗棉3号的遗传机制研究 I .产量及其产量构成因素的遗传分析

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摘要 利用泗棉3号和CARMEN构建的RIL及其F₂、B₁、B₂、P₁、P₂、F₁两套群体, 同时在3个环境中, 采用各自的联合世代分析方法, 研究了我国长江流域棉区广泛种植的优良品种泗棉3号高产性状的遗传规律。遗传模型分析揭示泗棉3号×Carmen组合的产量及其产量构成因素的最适遗传模型符合主基因+多基因混合遗传模型, 说明存在控制这些性状的主基因。所有性状在不同环境中的遗传模型不同。同时, 各性状在不同环境中的主基因遗传率变化较大, 而多基因遗传率在不同环境中变化相对较小, 表明环境对数量性状主基因的表达影响大, 对多基因的表达也存在影响。对环境间差异较大性状的研究和选育, 要在多个特定的环境中进行, 才能提高效率。

关键词 [棉花](#) [产量性状](#) [主基因加多基因遗传模型](#)

分类号 [S562](#)

Genetic Mechanism of High Yield in *G. hirsutum* cv. Simian 3 I . Inheritance Analysis Using Major Gene Plus Polygene Mixed Inheritance Model

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Abstract Simian 3, with high yield and high lint percentage, have been one of the most excellent cotton cultivars in China and most extensively grown in Yangtze River cotton-growing valley. The genetics mechanism of high yield in Simian 3 is the key of great significance to high yield breeding. Both RIL population and B1, B2 and F2 generations derived from the cross Simian 3×Carmen, together with two parents and F1 generation, were grown in 3 environments at Nanjing city and Guanyun county, Jiangsu Province, to make a genetics analysis of high yield and its components for *G. hirsutum* cv. Simian 3. Jointly segregating analysis were used to analyze the genetics of lint yield and its components in the combination of Simian 3 ×Carmen by using the method of major gene plus polygene mixed inheritance model. The optimum models of all traits were major gene plus polygene mixed inheritance models. The result indicated that there might be all major genes for yield and its components, and their expression could be greatly influenced by various environments. The genetics parameters of major genes were varied more greatly than those of the polygene, which indicated that the effect of environmental condition on the performance of the major gene was larger than that of the polygene. More environments should be used in genetic studies or breeding to improve the selection efficiency for the yield, which can be influenced sharp by environmental condition.

Key words [Yield traits](#) [Major gene plus polygene mixed inheritance model](#) [Upland cotton](#)

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