



### 转基因抗虫陆地棉与优质品系杂交铃重、衣分的遗传及其F<sub>1</sub>杂种优势分析

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### Genetic Effects and Heterosis Analysis for Boll Weight and Lint Percentage of Bt Transgenic Upland Cotton Crossed with Superior Fiber Quality Accessions

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摘要

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**摘要** 利用7个陆地棉抗虫常规品种(品系)为母本, 5个优质不抗虫品系为父本, 按NCII设计配制了35个组合, 采用“加性-显性遗传模型”(“A-D模型”) 对亲本及F<sub>1</sub>两年的铃重、衣分数据进行了分析。结果表明, 铃重的遗传主要受到显性效应的控制, 衣分主要受到加性效应的控制, 显性效应对衣分也有重要影响。F<sub>1</sub>的铃重具有极显著的正向群体平均优势和正向超亲优势, 而衣分则具有极显著的正向群体平均优势和负向群体超亲优势。铃重狭义遗传率为0, 进行杂交育种时不宜在早代进行选择, 但因其具有较高的杂种优势, 可通过杂种优势利用途径提高棉花的铃重; 衣分具有较高的狭义遗传率, 适宜在早中世代选择。

**关键词:** 陆地棉 双列杂交 遗传分析 杂种优势 铃重 衣分

**Abstract:** To detect the genetic effects and heterosis of boll weight and lint percentage of upland cotton (*Gossypium hirsutum* L.), seven high-yield cultivars(lines) with transgenic resistance to bollworm and five superior fiber quality accessions and 35 crosses derived from these 12 parent lines via North Carolina II design (NC II design) were utilized. The Additive-Dominance model was employed to dissect the genetic effects and predict the heterosis of the two traits. The results indicated that boll weight was mainly dominant genetic effect with variance ratio of 61.1%, while the lint percentage was predominantly affected by additive component with variance ratio of 57.9%. And significant positive population mean heterosis and population over-parents heterosis, 8.8% and 4.9%, respectively, was detected for both boll weight at 1% significant level; while there existed significant positive population mean heterosis and negative population over-parents heterosis, though they were low, only 1.8% and -2.2%, respectively. None-existed narrow heritability for boll weight suggested boll weight should be selected in advanced generation while hybrid breeding procedure and its hybrid vigor could be utilized. Whereas lint percentage should be selected in early generation, because the narrow heritability was high(57.9%) for this trait.

**Keywords:** *Gossypium hirsutum* L. diallel analysis genetic analysis heterosis boll weight lint percentage

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