陆地棉品种百棉 1 号主要株型性状的遗传研究

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Quantitative Inheritance for Main Plant Architecture Traits of Upland Cotton Variety Baimian 1

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摘要	参考文献	相关文章

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摘要 对陆地棉品种百棉 1 号主要株型性状进行了主基因 - 多基因混合遗传分析。结果表明，株高、果枝长度、株高 / 果枝长度、主茎节间长度、果枝节间长度、总果节数、总果枝数、有效果枝数和果枝夹角的最适模型分别为 D-4、C-0、D-4、D-2 、E-0、D-2、B-1、B-1和 C-0，除果枝长度和果枝夹角外，其它性状均检测到主基因。总果枝数、有效果枝数和果枝节间长度为主基因遗传或以主基因遗传为主，对其可采用单交重组或简单回交转育转移增效主基因；株高、株高 / 果枝长度、主茎节间长度、果枝长度和果枝夹角为多基因遗传或以多基因遗传为主，对其可采用聚合回交或轮回选择累积增效多基因；总果节数以主基因和多基因遗传并重，对其可根据主基因、多基因相对效应大小分别考虑。

关键词： 棉花 株型性状 株型育种 主基因 - 多基因

Abstract： The major gene-poly gene mixed inheritance model was used to analyze the genetics of main plant architecture traits by using six generations of upland cotton variety Baimian 1(P_1) and genetic standard line TM-1 (P_2), and their F_1, B_1, B_2 and F_2. The results showed that optimum genetic models of plant height, fruit branch length, ratio of plant height to fruit branch length, stem internodes length, fruit branch internodes length, fruit nodes, fruit branches, effective fruit branches and fruit branch angle were D-4, C-0, D-4, D-2, E-0, D-2, B-1, B-1and C-0, respectively. The major genes of all traits were always detected except fruit branch length and fruit branch angle. Understanding the major gene-poly gene genetic rule of plant architecture traits, we would choose the appropriate means to enhance breeding efficiency. Single cross recombination or simple backcross should be adopted to transfer positive major genes for the traits including fruit branches, effective fruit branches and fruit branch internodes length, which belonged to typical major gene inheritance or mainly controlled by major gene; polymerization backcross or recurrent selection should be adopted to cumulate positive polygenes for the traits including plant height, ratio of plant height to fruit branch length, stem internodes length, fruit branch length and fruit branch angle, which belonged to typical polygene inheritance or were mainly controlled by polygene; the relative effects of major genes and polygenes should be considered separately to improve favorable major genes and polygenes simultaneously for fruit nodes controlled by major gene and polygene altogether. Our studies might provide some theoretical references on improving cotton yield through plant architecture breeding.

Keywords： cotton plant architecture traits plant architecture breeding major gene-poly gene

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