

**IMPROVEMENT OF REGENERATION AND  
AGROBACTERIUM-MEDIATED  
TRANSFORMATION OF COTTON**

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**Abstract**

Various aspects of transformation and regeneration processes were examined in efforts to improve the efficiency of production of transgenic cotton (*Gossypium hirsutum* L.). Green fluorescent protein (GFP) proved to be a valuable tool in elucidating the timing and localization of transient gene expression and in visualizing conversion of transient events to stable transformation events. By day four following infection, there was maximal transient activity in the cells at the cut edge of *Agrobacterium*-infected cotyledon discs. We were able to visualize conversion of some of these events to stable transformation by day eight. The effects of *Agrobacterium* strains, acetosyringone, and temperature on stable transformation were evaluated also. Strain LBA4404 proved to be significantly better than EHA105. Acetosyringone was found to increase significantly the stable transformation efficiency in cotton. Cocultivation at 21°C, compared to 25°C, consistently resulted in higher transformation frequencies. Various other important aspects of the regeneration process were evaluated and an overall scheme for producing transgenic cotton is presented.