GREEN FLUORESCENT PROTEIN (GFP) AS A SCREEN MARKER IN COTTON TRANSFORMATION

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Abstract

Antibiotic and herbicide resistant gene selection based transformation system is a time consuming system. The presence of these genes in transgenic plants has raised public concern about ecological and food safety perspective of these genes in genetically modified (GM) crops. Generating a new antibiotic- and herbicide-resistant gene-free, time efficient transformation system would certainly speed up GM crop production and contribute to the public acceptance of GM crops.

Two comparative experiments were applied to evaluate GFP using as a visual screen marker and as a visual selection marker in cotton genetic transformation. In the first experiment, no selection was applied immediately after bombardment transformation with the GFP positive somatic embryos being screened when the somatic embryo were regenerated. In the second experiment, GFP acted as a visual selection marker and selection was applied immediately after embryogenic callus bombardment. The second experiment produced 12 transgenic cotton lines per plate in two months; the first experiment produced 2 lines of transgenics per plate in one month. PCR and Southern hybridization of genomic DNA confirmed foreign gene insertion into the cotton genome in plants obtained in both experiments.