

**MICROPROPAGATION OF
AN INDIAN CULTIVAR
OF *GOSSYPIUM HIRSUTUM* COTTON**

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bombardment-mediated gene transfer techniques to develop transgenic plants.

Abstract

Spectacular improvement in production of cotton crops the world over has been achieved by conventional plant breeding and innovative agricultural practices; however, considerable crop loss annually due to insects remains a major concern. Moreover, an excessive use of insecticides not only adds to the cost of production, but is also an environmental hazard. Modern gene manipulation techniques have opened up new possibilities of introducing desirable traits/genes to develop cotton plants resistant to insects and tolerant to herbicides, to name a few. The methods have resulted in development and release of transgenic cotton varieties in the U.S. Efforts are ongoing in several other countries to develop transgenic cotton for their own local and regional conditions. In India, an efficient regeneration protocol for Indian cultivars of cotton is a major goal. In our laboratory, a protocol for multiple shoot differentiation of an Indian cultivar of cotton LRK-516 (Anjali) has been developed. The cultivar was selected for the present work since it is a compact and high yielding *G.hirsutum* variety with superior medium staple. Induction of multiple shoots was achieved using cotyledonary nodes devoid of cotyledons and apical meristems. Explants excised from 35-day-old seedlings grown aseptically in glass bottles yielded the maximum number of shoots on average (8.3 shoots/explant) when placed on Murashige and Skoog's (MS) basal medium supplemented with 6-benzylaminopurine and kinetin (2.5 mg/l each). It was observed that the type of cytokinin and age of seedling played a major role in induction of multiple shoots. Elongation of shoots was achieved in liquid or on agar MS basal medium without phytohormones. Elongated shoots were rooted on half-strength agar-solidified MS basal medium alone or when supplemented with 0.05 or 0.1 mg/l naphthalene acetic acid. Hardening and survival of tissue culture plants was 95% under greenhouse conditions. Normal boll formation, fiber production and seed germination was observed in all tissue culture-raised cotton plants. The standardized regeneration protocol is presently being used in *Agrobacterium*- and particle