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## Bt-Cotton Production in Karnataka, India

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### Abstract

Bollworms constitute a major target of pest management efforts in India. Bollworm resistant Bt-cotton that was approved in 2002 for commercial cultivation in India could reduce the use of pesticides and associated negative effects on human health and the ecosystems. The area under approved Bt-varieties in India has increased from about 38,500 ha in the 2002/2003 season to about 500,000 ha in 2004/2005. The recent figure equals 5 % of the total cotton area and about 11 % of the area under hybrid varieties. Studies of the economic performance of Bt-cotton in India have come to contradictory results suggesting that careful analysis of the factors determining the profitability of this new technology is required.

Most of the studies on impacts of Bt technology in India rely on cross-sectional or field trial data. The data for this study comprises a panel of 100 early adopters across 50 villages in the state of Karnataka that were surveyed in 2002/2003 and 2004/2005. In addition 50 non-adopters were surveyed in the second season. Information collected includes data on household demographics, cropping pattern, cotton production, health impairment due to pesticides and on knowledge and perception of Bt cotton. In addition, village level information was collected. Farmers' reasons for continued cultivation or disadoption after one or two years of experience with the technology are analysed. Analysis of gross margins and structure of production costs, which are examined in the context of the prevailing climatic and pest situation are compared between the two seasons and for Bt- and conventional varieties. To assess the role of the Bt trait and the productivity of other inputs production function analysis is carried out using different functional specifications within a damage control framework. The results are interpreted with regard to the agro-ecological conditions prevailing in the surveyed area.

**Keywords:** Bt-cotton, India, panel data, production function estimation, profitability