

Research Paper :

## Perceptions of Karnataka farmers on insect pests and pest management practices in Bt. cotton



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### SUMMARY

This study was undertaken with the purpose of examining the various factors involved in the adoption of Bt. cotton, source of Bt. cotton seeds purchase and mainly to evaluate farmers' know how on Bt. technology and perception on insect pests and disease incidence and their management practices in Bt. cotton in Karnataka, India. A total of 500 Bt. cotton growing farmers were interviewed in the cotton belt of Karnataka through a questionnaire. Drastic reduction in damage due to bollworms, fewer pesticide interventions, reduced labour and higher yield and profit seems to be the main factors responsible for large scale adoption of Bt. cotton. Local market and seed companies found to be the major source of Bt. cotton seed while some farmers in certain locations go for illegal Bt. cotton seeds due to their availability at cheap rate and also on credit. The present study revealed that farmers were aware of the major bollworm pests and expressed low to nil incidence of bollworms (*Helicoverpa armigera*, *Earias vitella*, *Pectinophora gossypiella*,) and gradual increase in incidence of *Spodoptera litura* and sucking pests (*Thrips tabaci*, *Amrasca devastans* and *Aphis gossypii*) in Bt. cotton. Farmers also observed the incidence of new secondary pests, the cotton mealybug (*Phenacoccus* sp.), cotton mirid bug (*Creontiodes biseratense*), shoot weevil (*Alcidodes affaber*) that caused moderate to severe damage to the crop in most of the cotton-growing districts. Farmers knew little about natural enemies and diseases in their fields, but reported a high incidence of cotton leaf reddening.

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Cotton is a major crop of India grown in about 22.50 million acres, the largest cotton area in the world. But while India ranks first in total area of cotton planted, it ranks third in total cotton produced because of the low yield per acre. More than four million farmers with small and medium holdings cultivate cotton in the country. Average cotton yields in India have been 320 kg/ha, compared with a world cotton average of 580 g/ha. As a result of low yields, cotton production in India represents only 13% of the total world production. Nevertheless, India accounted for approximately 20% of the world's total cotton area. Cotton provides livelihood to over 60 million people in India and contributes 29.8% of the Indian Agricultural Gross Domestic Product. A major limiting factor for cotton production in India is the damage due to insect pests, especially bollworms. Of the over Rs. 2400 crores worth of insecticides used in Indian

agriculture, more than half are used to control cotton pests and of this, about Rs. 1100 crores are used to control bollworm alone. Often excessive use of pesticides intensifies pest problems and complicates pest control strategies besides causing massive ecological disruption and endangerment of human health. Biotechnology has emerged as the most important scientific tool of the 21<sup>st</sup> century. Realizing the importance of severity of the loss of cotton crop due to insect pests, Bt. cotton (Bollgard) hybrids have been approved for commercial cultivation in India, since March 2002. The use of transgenically modified cotton that expresses an insecticidal protein toxin derived from *Bacillus thuringiensis* Berliner (Bt.) is revolutionizing global agriculture. Bt. cotton expressing the Cry1Ac protein has been available commercially in the US since 1996 and is also being grown in Mexico, Colombia, Australia, China, Argentina and South Africa

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