

## Evaluation of Bt cotton with local hybrid cotton variety in Haveri district of Karnataka



### Agriculture

**KEYWORDS :** Bt Cotton, Hybrid Cotton, IPM, INM, Attitude of farmers, Constraints

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### ABSTRACT

*There was a favorable attitude towards the Bt cotton than Hybrid cotton till recent past. The personnel perceived that the Bt cotton seeds are costlier beyond the capacity of small and marginal farmers and they require training in IPM and INM before the season commences. The farmers of the Haveri area obtained more yield in Bt cotton than Hybrid cotton. The farmers faced major constraints such as, high seed cost of Bt cotton, high pest and disease incidence other than bollworm, in turn less yield and low market price.*

### Introduction

Cotton is a White Gold premier cash crop contributing 26% of the total cotton growing area in the world with a share of 15% of global production. Though, India stands first in area (94.06 lakh. ha) with a production of 290 lakh bales (170 kg each) with the average productivity of 520 Kg / ha (Anon., 2007). India is the only country where the trend of cotton productivity is increasing. This trend holds good for Karnataka also (Choudhary, B and K Gaur, 2010).

In India, area under cultivation of Bt cotton has increased from 5 lakh hectares in 2004 to 13 lakh ha in 2005-06 (Anon., 2008) and is expected to touch more upto 2020. Various Indian companies are rapidly releasing Bt cotton hybrids. Farmers are growing Bt cotton because it requires only few sprays of pesticides, which help them in reducing the cost of cultivation. Apart from increase in production, the cotton consumes 46 per cent of the total pesticides in the country.

There is a growing body of literature about the impacts of *Bacillus thuringiensis* (Bt) cotton in developing countries. While many studies show remarkable benefits for farmers, there are also reports that question these results. Most previous studies consider impacts in deterministic terms, neglecting existing variability. Here we explain the main factors influencing the agronomic and economic outcomes. Apart from differences in pest pressure and patterns of pesticide use, germplasm effects can play an important role. Theoretical arguments are supported by empirical evidence from India. Better understanding of impact variability can help explain some of the paradoxes in the recent controversy over genetically modified crops (Matin et.al., 2006).

In India, cotton is cultivated both under irrigated and rain fed conditions. But low yield levels, high cost of cultivation and poor market price are the major problems faced by farmers. Still farmers go for this crop as Bt cotton and Hybrid cotton play major role in textile industry.

The soils of Haveri district comprises of deep black, medium deep black and red soils constituting the latter nearly 56% of the total area. The soils offer high production potentials. In Haveri district. Hybrid cotton, Bt-cotton, maize, sunflower, chilli, onion, garlic and vegetable crops are being cultivated both under rain-fed and irrigated situations.

### Objectives:

- 1) To know the attitude of farmers towards Bt cotton and Hybrid cotton
- 2) To know the perception of extension personal towards Bt cotton and hybrid cotton.

- 3) To identify the constraints in the cultivation of Bt cotton and Hybrid cotton and

- 4) To study the yield levels of Bt cotton and Hybrid cotton

### Methodology :

The present investigation was carried out in the Haveri District, Karnataka during the year 2009-10. Out of seven talukas, Ranebennur, Byadagi and Haveri taukas (sub-districts) were selected for the study based on the highest area under Bt cotton and hybrid cotton cultivation. From these selected talukas, five villages were selected based on the highest cotton area. From each village six farmers were selected by simple random sampling technique with criteria of a farmer with one year experience in Bt cotton cultivation. Further, 30 field functionaries of various agencies and departments were randomly selected and interviewed to know their perception towards Bt cotton and Hybrid cotton cultivation. Frequency and percentage were employed to analyze the data. The data collection was done by personal interview method. The total sample size was 60.

The variables selected for the study were attitude, perception, yield and demographic factors. An schedule was developed and pre-tested in non sampled area. The data were collected through personal interview of the respondents. Simple statistical tools were applied to draw the inferences.

### Results and Discussion:

The results revealed that majority (83.3%) of farmers had favorable attitude towards Bt cotton cultivation (table 1). the reasons could be that it is high yielding, less pest incidence and labour saving (Sivakumar K., 2002). In few cases Hybrid cotton had less favorable attitude of the farmers because of less yield, more number of sprays which require high cost compared to Bt cotton. Using farmers' binary responses as dependent variable, we estimated a logit model. Household income, household size, and the farmer's education level influenced adoption of Bt cotton positively (Krishna & Quim, 2007).

Results indicated that all most all the personnel expressed that Bt cotton involves high cost of seeds and fear of spurious seed (table 2). In case of Hybrid cotton also they opined the same. (Sadashivappa and Matin Qaim, 2009). They perceived that they require training on cultivation aspects especially on IPM and INM before season commences. So that they can apply confidently to the technology. They also perceived skill involved in organizing the large scale demonstrations on the farmers field. Further they expressed that the universities should take up production and supply of seeds through Agriculture Department on a large scale at reasonable rate. This would avoid the exploitation by the private agencies who are charging exorbitant seed

price. And they had other apprehensions about the Bt cotton seeds that it will create low yield in other crops of succeeding season (Dilipmonga., 2008). Strong biosafety regulation with public participation is both a democratic and an ecological imperative (Vandadna et. al.. 1999).

The Table 3 highlights about the constraints faced by the farmers in ranking on cultivation of the cotton. The most difficult one was, getting the remunerative price during the season, secondly, they owned low fertility status lands, thirdly, severity of leaf reddening at cotton picking stage and the high cost of seeds of Bt cotton were the major constraints of the growers. In case of Hybrid cotton, susceptibility to pest and diseases (it requires more sprays which incurs more cost), bad boll opening, low market price, low soil fertility status and leaf reddening at picking stage are the constraints.

Majority of the farmers (67.0%) obtained medium level of cotton yield (table 4) ranging from 10 to 15 q/acre, in case of hybrid cotton also, majority of the farmers (half of them) obtained the same (Vasant and Nambodri, 2006).

**Conclusions**

- 1) There was a favorable attitude towards Bt cotton than Hybrid cotton
- 2) The department personnel perceived that the Bt cotton seeds are costly beyond the capacity of small and marginal farmers and they require training in IPM and INM before the season commences.
- 3) The farmers obtained more yield in Bt cotton than in Hybrid cotton
- 4) The farmers faced major constraints such as, high seed cost of Bt cotton, high pest and disease incidence in Hybrid cotton, which involves high cost of spraying and less yield and also low market price.

**Table 1: Attitude of farmers towards BT and hybrid Cotton cultivation.**

High favorable		Favorable		Less favorable	
No.	Percentage (%)	No.	Percentage (%)	No.	Percentage (%)
4	6.6	50	83.0	3	5.0

**Table2: Perception of Extension personnel towards BT and Hybrid cotton cultivation (n=30)**

Perception	BT cotton		Hybrid cotton	
	No.	Percentage	No.	Percentage
High cost of seed	28.00	93.24	05.00	16.65
Suitable to only big farmers	05.00	16.65	10.00	33.30
Fear of spurious seeds supply during season	20.00	66.60	26.00	86.58
Training before sowing of cotton crop	27.00	89.91	20.00	66.60

Conducting large scale demonstrations in farmers field	24.00	79.92	20.00	66.60
Other related issues				
Fear of less yield during next season	06.00	19.90	-	-
Agricultural Universities and State Department of Agriculture should produce seeds and sell at cheaper rates than private company seeds	14.00	46.62	19.00	63.27

**Table 3: Constraints encountered during BT and Hybrid cotton cultivation (n = 60)**

Constraints	BT cotton			Hybrid cotton		
	No.	Percentage (%)	Rank	No.	Percentage	Rank
High cost of seed	45	75.00	IV	05	08.35	VII
Non-availability of quality seeds timely	20	33.00	VI	46	77.00	VI
Supply of inferior seeds by unauthorized dealers/ persons	15	25.00	VII	37	62.00	VII
Bad boll opening in early stage	10	17.00	VIII	58	97.00	II
Leaf reddening during peak period	48	80.00	III	52	87.00	V
Suitability of soil and fertility	50	84.00	II	53	88.51	IV
Wrong propaganda by the agencies of company	41	68.00	V	60	100.00	I
Low market price during season	56	94.00	I	56	94.00	III
Non availability of technical literature	09	15.00	IX	-	-	-

**Table 4: Average yield level of BT and Hybrid cotton (n = 60)**

BT cotton	Hybrid cotton				
	Cotton yield (Qtl/acre)	Number	Percentage	Number	Percentage
1	Low (<10)	15.00	25.00	23.00	38.33
2	Medium (10 to 15)	40.00	66.66	30.00	50.00
	High (>15)	07.00	11.66	05.00	08.33
Total		60	100.9	60	100.

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