

**RESEARCH ARTICLE :**

# Extent of adoption of farmers about Bt cotton practices: problems and suggestions for improving the adoption of Bt cotton practices

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**SUMMARY :** Bt cotton, the first genetically modified (GM) crop in India, The reason for the introduction of Bt cotton was to counter attack the three types of bollworms, viz., American bollworm (*Helicoverpa armigera*), pink bollworm (*Pectinophora gossypiella*) and spotted bollworms (*Earias vitella*) Bt. cotton hybrids have exhibited excellent control of Bollworms and reduced the use of insecticides. This has led to create ecofriendly environment without compromising on profitable yield. In addition to reducing production cost and increasing profit. This paper makes an attempt to find out the Problems and Suggestions for the potential for the adoption of Bt Cotton cultivation. The major problems elicited by the respondents were High cost and non –availability of required hybrid seeds at right time, High cost and non - availability of chemical fertilizer in time, More sucking pest attack, Not adopting recommended dose of fertilizers and seed rate, Lack of knowledge to manage the disease and pests, Lack of credit facility, Price fluctuations, Non-availability of labourers and high wages of labor.

**KEY WORDS:**

Adoption, Bt cotton,  
Suggestion,  
Improving

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## **BACKGROUND AND OBJECTIVES**

Cotton (*Gossypium hirsutum* L.) referred to as the White Gold is one of the most important fiber and commercial crop playing a key role in economic, political and social affairs in our country as well as world. Cotton occupies a predominant place among cash crops touching the country's economy at several points by generating direct and indirect employment in the agricultural and industrial sectors. Following a long history of

cultivation of traditional varieties, hybrid cotton was introduced in India for the first time in 1970. This was in the state of Gujarat and by virtue of its high yield potential it became very popular. A large number of hybrids were released. However, it was soon realized that the hybrids were highly susceptible to pest attack and damage. This became a severe problem especially from 1993-94 onwards, leading to frequent crop failures as well as fluctuating declining yields. Over 150 different insect pests species are reported to attack

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cotton at various stages of its growth causing severe reduction in yields, and reduction in massive pesticide use by farmers and high cost of cultivation. It is estimated that over 55 % of the pesticides sold in the Country are used on cotton. The farmers have been highly dissatisfied and have been looking for cotton varieties that have pest resistant. It was at this juncture that the transgenic varieties with Bt. arrived on the world and then in the country. Bt. cotton, the first genetically modified (GM) crop in India, was initially approved in India on March 26th 2002 for commercial cultivation in six states belonging to southern and central cotton cultivation zones of the country. The commercial cultivation of Bt. cotton in the world first began in 1996. The reason for the introduction of Bt. cotton was to counter attack the three types of bollworms, viz. American bollworm (*Helicoverpa armigera*), pink bollworm (*Pectinophora gossypiella*) and spotted bollworms (*Earias vitella*) which used to cause substantial damage to the crop, resulting in low productivity. Therefore, Mahyco (Maharashtra Hybrid Seed Company), in collaboration with Monsanto, introduced Bt. cotton technology into India. Bt. Cotton carries the Cry1Ac gene derived from the common soil bacterium *Bacillus thuringiensis* var. *kurstaki*, which results in the expression of the Cry1Ac protein that confers resistance to the bollworm complex (Barwal *et al.*, 2004). Bt. cotton hybrids have exhibited excellent control of American Bollworm and reduced the use of insecticides. This has led to create ecofriendly environment without compromising on profitable yield (Manikin *et al.* 2008). In addition to reducing production cost and increasing profit, Bt. cotton has lowered farming risk and improved farmer's perspective in cultivating cotton crop.

## RESOURCES AND METHODS

Warangal district of Telangana will be purposively selected for higher production of Bt. cotton, Warangal is the second largest Bt. Cotton producer in Telangana state with the area of more than 2 lakh hectares of land, and locale for present investigation because the researcher is well acquainted with the locality and culture. District Warangal comprised of 9 Community development blocks. Out of these 9 blocks, the Warangal block will be selected purposively for the study because of the Warangal block is second largest producer of Bt. Cotton in district and its easy accessibility and familiarity of researcher with

the local language, socio economic and cultural conditions. An exhaustive list of village of Warangal block will be prepared and 5 villages will be selected randomly. Moreover, list of farm families from each of the selected village will be prepared and 20 respondents from each of the selected village will be identified through random sampling technique. Thus, a total of 100 rural farmers constitutes the sample size for the purpose of further investigation. A knowledge test was developed. Data was collected using interview schedule developed for the study. Based on obtained scores the respondents were grouped into low, medium and high knowledge categories according to equal interval method. The collected data was analyzed using appropriate statistical tools like frequency and percentage, class interval, arithmetic mean (X), standard deviation and co-efficient of correlation.

### Objectives :

To identify the constraints in adoption of Bt. cotton faced by respondents and Remedial measures to overcome the constraints.

## OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads :

### Constraints and suggestions elicited by the respondents in the process of acquiring knowledge and adoption of bt. cotton practices :

Problems expressed by the respondents in adoption of Bt. Cotton practices. It could be observed from the above table 1 that the constraints identified by the respondents for adoption of Bt. Cotton crop were : High cost and non –availability of required hybrid seeds at right time 85 per cent (I), High cost and non - availability of chemical fertilizer in time 82 per cent (II), More sucking pest attack 71 per cent (III), Not adopting recommended dose of fertilizers and seed rate 69 per cent (IV), Lack of knowledge to manage the disease and pests 66 per cent (V), Lack of credit facility 65 per cent (VI), Price fluctuations 62 per cent (VII), Non-availability of labourers and high wages of labour 60 per cent (VIII), Lack of storage facilities 55 per cent (IX), Lack of irrigation facility 45 per cent (X).

From the Table 2. Suggestions related to Bt. Cotton were, Provision of improved seed in time with minimum

**Table 1 : Constraints elicited by the respondents on Bt. Cotton practices**

Sr. No.	Problems/Constraints	Respondents		Rank
		No	Per cent	
1.	High cost and non –availability of required hybrid seeds at right time 85 per cent	85	85	I
2.	High cost and non - availability of chemical fertilizer in time.	82	82	II
3.	More sucking pest attack.	71	71	III
4.	Not adopting recommended dose of fertilizers and Seed rate.	69	69	IV
5.	Lack of knowledge to manage the disease and pests.	66	66	V
6.	Lack of credit facility.	65	65	VI
7.	Price fluctuations.	62	62	VII
8.	Non-availability of labourers and high wages of Labour.	60	60	VIII
9.	Lack of storage facilities	55	55	IX
10.	Lack of irrigation facility 45 per cent.	45	45	X

**Table 2 : Suggestions elicited by the respondents on Bt. Cotton practices**

Sr. No.	Suggestions	Respondents		Rank
		No	Percentage	
1.	provision of improved seed in time with minimum cost	81	81	I
2.	Efforts should be made for providing fertilizers on appropriate rate	80	80	II
3.	Develop sucking pest resistant varieties	71	71	III
4.	Improve farmers knowledge on recommended seed rate and fertilizers applications by the training”	69	69	IV
5.	Training on identification of pests and diseases and their control	66	66	V
6.	Government provide remunerative prices to the produce according to situation”	65	65	VI
7.	Arrangement of timely credit facilities from RRBs/ PACSs	60	60	VII
8.	Provision of storage facilities”	58	58	VIII
9.	Government provided irrigation facilities and develop drought resistant varieties by the scientists	55	55	IX

cost is the common problem 81 per cent (I), Efforts should be made for providing fertilizers on appropriate rate 80 per cent (II), Develop sucking pest resistant varieties 71 per cent (III), Improve farmers knowledge on recommended seed rate and fertilizers applications by the training 69 per cent (IV), Training on identification of pests and diseases and their control 66 per cent (V), Government provide remunerative prices to the produce according to situation 65 per cent (VI), Arrangement of timely credit facilities from RRBs/ PACSs 60 per cent (VII), Provision of storage facilities 58 per cent (VIII), Government provided irrigation facilities and develop drought resistant varieties by the scientists 55per cent (IX).

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