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Knowledge and Adoption of Bt Cotton Cultivation Practices

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ABSTRACT

The present study was conducted in Jalgaon and Dhule district of North Maharashtra, with a random sample of 175 Bt cotton growers, to measure the level of knowledge of Bt cotton growers and to understand the relationship between selected characteristics of Bt cotton growers and their extent of adoption. The results indicate that majority of the respondents had medium (53.71 per cent) level of adoption towards cultivation practices of Bt cotton. The analysis of correlation revealed that variables viz., education, area under Bt cotton, annual income, socio-economic status, social participation, scientific orientation, cosmopoliteness, extension contact and knowledge had positive and significant influence on their level of knowledge.

Key words: Adoption; bt cotton; cultivation practices; bacillus thuringiensis (bt).

INTRODUCTION

Cotton is one of the most important cash crops of our country; it is also called as 'White Gold'. Cotton is cultivated in about 60 countries of the world. Amongst, India occupies largest area (9.3 m.ha.) under cotton. The economic loss in the cotton through pests is serious concern. The bollworm complex causes significant yield losses, further, the harmful effects of insecticides leads to environmental pollution and more specifically increases the cost of cultivation. In this context the application of biotechnology was seen as a solution and thus, the efforts were taken that resulted in developing Bt cotton.

Bt cotton is a genetically engineered crop hence is referred as transgenic cotton. This Bt cotton contains a toxic protein – inducing gene from soil borne bacterium Bacillus thuringiensis (Bt), thus enabling the crop to produce toxin resulting in decreased bollworm infestation, reduced application of insecticides, increased productivity & improved quality of 'kapas' that provides peace to the farmers (Rummel et.al. 1994, Flint et.al. 1995, Bacheler and Mott, 1996).

The Genetically Engineering Approval Committee (GEAC) permitted the release of Bt cotton for commercial cultivation during 2002-03 crop season. Being the first and only crop that received environmental clearance as GMO (Genetically Modified Organisms) in India, it is receiving maximum attention from planners, scientists, social workers, media, farmers and general public.

The area under Bt cotton is constantly increasing in all the states of the country since its induction. In the first year itself the Bt cotton was cultivated on 29072 hectares. It was increased to 92000 hectares in 2003. It was increased again four-fold in 2004 to reach over half a million hectares (524, 000 ha.). In 2005, the area covered by to Bt cotton in India continued to climb reaching 1.3 million hectares that is , an increase of 160 per cent over 2004 (Anonymous, 2005). In 2006, the record increases in adoption in India continued with almost tripling of area under Bt cotton that is from 1.3 million hectares to 3.8 million hectares.

The major states growing Bt cotton in 2006, in order of hectarage, wereMaharashtra (1.840 million hectares representing 48 per cent of all Bt cotton in India in 2006) followed by Andhra Pradesh (830,000 hectares or 22 per cent), Gujarat (470,000 hectares or 12 per cent), Madhya Pradesh (310,000 hectares or 8 per cent), and 215,000 hectares (6per cent) in the Northern Zone and the balance in Karnataka and Tamil Nadu and other states (James,

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2006). Despite of this, there are debates over the advantages and disadvantages of Bt cotton. Recently, ICAR has reconfirmed that there is a net increase of 33.7 per cent yield in Bt over non-Bt cotton hybrids in frontline demonstrations (Chaudhary, 2007). Some of these observations were based on ignorance of the people about Bt cotton technology, secondly few growers adopted the Bt cotton haphazardly without much consideration to the package of practices recommended for Bt cotton cultivation. So, it was felt necessary to measure the extent of adoption of Bt cotton cultivation practices among the growers. The present study was carried out with following objectives to ascertain the extent of adoption of Bt cotton cultivation practices by the growers and to understand the relationship between selected characteristics of Bt cotton growers and their adoption behaviour.

METHODOLOGY

The present study was carried out in Jalgaon and Dhule district of Maharashtra. From these districts four talukas were selected purposively *i.e.* Chopda, Jamner, Shirpur and Shindkheda, as they cover highest area under Bt cotton. Five villages were randomly selected from each tahsil. Total twenty villages were selected for the study. A list of Bt cotton growers from the selected villages was prepared and 175 respondents were drawn by 'lottery method' of random sampling. An interview schedule was prepared in view of the objectives of the study and data were collected by personal interview of the selected respondents. Measurement of knowledge of Bt cotton growers about cultivation practices was done by using expert made test.

RESULTS AND DISCSSION

Level of adoption

Adoption is a decision to make full use of innovation as the best course of action available. It thus involves a decision and an overt action. It was operationally defined as the actual use of the Bt cotton cultivation practices by the cotton growers for last five years. The distribution of respondents as per the adoption of Bt cotton cultivation practices is presented in Table 1.

Table 1: Distribution of respondents according to the extent of adoption of cultivation practices of Bt cotton

Category	Respondents (n = 175)	
	Number	Percentage
Low	49	28.00
Medium	94	53.71
High	32	18.29
Total	175	100.00

The data in Table 1, reveals that over half of the respondents (53.71 %) had medium level of adoption regarding cultivation practices of Bt cotton, followed by 28 per cent of respondents belonging to low adoption category, whereas, only 18.29 per cent of respondents showed high level of adoption of the cultivation practices of Bt cotton.

In brief, the Bt cotton growers in the study area were found to be medium adopters of cultivation practices of Bt cotton. Similar results were reported by Veeraiah et. al. (2005), Bhalekar (2006) and Kuthe (2006).

Relationship between selected characteristics of Bt cotton growers with their adoption

Adoption of Bt cotton technology by the growers might have been a function of different factors.

Table 2: Coefficient of correlation of selected characteristics of Bt cotton growers with their adoption of Bt cotton cultivation practices

Characteristics	Coefficient of correlation
Age	0.002^{NS}
Education	0.618**
Land holding	0.141^{NS}
Area under Bt cotton	0.408**
Annual income	0.189*
Socio economic status	0.526**
Social participation	0.392**
Risk orientation	0.113^{NS}
Scientific orientation	0.396**
Cosmopoliteness	0.341**
Extension contact	0.505**
Knowledge of Bt cotton cultivation practice	0.806**

** = significant at 0.01 level of probability * = significant at 0.05 level of probability

A perusal of data presented in table 2 revealed that, among the twelve characteristics studied, nine characteristics namely education, area under Bt cotton, annual income, socio economic status, social participation, scientific orientation, cosmopoliteness, extension contact and knowledge of Bt cotton were significantly related with extent of adoption of Bt cotton cultivation practices. However, age, land holding and risk orientation did not establishany relationship with adoption of Bt cotton cultivation practices. Similar findings were reported by Kuthe (2006), Patil (2006) and Shekhar (2006).

Thus, the level of education, area under Bt cotton, annual income, socio-economic status, social participation, scientific orientation, cosmopoliteness, extension contact and knowledge of Bt cotton had

influence to enhance the extentof adoption of cultivation practices of Bt cotton by the growers while, age, land holding and risk orientation has no influence over the knowledge of Bt cotton growers about cultivation practices of Bt cotton.

CONCLUSION

It can be concluded from the above results that majority of the Bt cotton growers had medium level of adoption of Bt cotton cultivation practices. The relational analysis of selected characteristics showed that., education, area under Bt cotton, annual income, socio economic status, social participation, scientific orientation cosmopoliteness, extension contact and knowledge influenced the adoption of Bt cotton technology by the growers.

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