

Present status of adoption of Bt cotton production technology by farmers

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ABSTRACT

The study was conducted in Nanded district of Maharashtra state to know the extent of adoption of Bt cotton production technology by the farmers and to find out constraints faced by them in adoption of Bt cotton production technology. From the study, it was found that most of them had medium level of adoption of Bt cotton production technology. Regarding constraints, all the Bt cotton growers expressed the constraints of non-availability of labour for preparatory tillage and intercultivation, lack of irrigation water, high cost of fertilizers and pesticides and non-availability of sufficient quantity of female labour for cotton picking.

INTRODUCTION

Cotton (*Gossypium* sp.) is said to be the king of cultivated crops being a main cash crop. Cotton is also known as 'White gold'. Cotton fulfills the need of clothing of human being. It is an important source of fibre and oil. Cotton seeds and seed cakes are important sources of concentrates to animals. Cotton is also used in manufacture of synthetic rubber, soaps, cosmetics, plastic, papers, explosive etc. Cotton is the prime source of natural fibre which is raw material of textile industry.

India ranks third in global cotton production after USA and China but per hectare yield of cotton in India is lowest with 300 kg per hectare against world average of 580 kg per hectare. Pest and disease attack is one of the most important factors affecting yield levels significantly. The loss due to it is 13 to 15 % which is a serious concern. The bollworm complex causes significant yield losses, further, the harmful effects of insecticides leading to environmental pollution and more specifically increasing the cost of cultivation. In this context the application of biotechnology was seen as a solution and thus the efforts have resulted in developing of Bt cotton. Bt is a genetically engineered crop hence is referred transgenic cotton. This Bt cotton contains a toxic protein – inducing gene from soil bore bacterium *Bacillus thuringiensis*, thus enabling the crop to produce toxin resulting in decrease bollworms infestation, reduced application of insecticides, increase the

productivity, quality of fibre and provide safety to the farmers. Therefore, the present study was undertaken to assess the extent of adoption and constraints of the Bt cotton growers in adoption of Bt cotton production technology.

METHODOLOGY

Kinwat and Bhokar talukas of Nanded district of Marathwada region of Maharashtra State were chosen purposively for the present study as it has highest area under Bt cotton. Five villages from each taluka were selected randomly. From each village 12 Bt cotton growers were selected randomly by Nth method of random sampling. Thus, sample size comprised 120 respondents. The selected Bt cotton growers were interviewed personally at their home or at their farm as per their convenience. The data were collected with the help of structured schedule and analysed by using frequency, percentage, mean and standard deviation.

RESULTS AND DISCUSSION

The findings of the present study have been presented under following heads:

Practice wise adoption of Bt cotton production technology by farmers:

Table 1 shows that most of the Bt cotton growers were under full adoption category like picking of cotton at morning hours (88.33 %), sowing during 15 may to 5 June (69.17 %), sowing at 90 x 60cm spacing (65.83 %),

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Table 1: Distribution of Bt cotton growers according to practice wise adoption (n=120)							
Sr. No.	Recommended practices	Full adoption		Partial adoption		No adoption	
		Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
1.	Selection of medium to heavy and well drained soil	74	61.67	46	38.33	00	00.00
2.	Soil testing	48	40.00	65	54.17	07	05.83
3.	Application of 20 to 25 CL compost per ha	53	44.16	62	51.67	05	04.17
4.	Use 3-4 kg seed per ha	36	30.00	84	70.00	00	00
5.	Sowing during 15 may to 5 June	83	69.17	00	00.00	37	30.83
6.	Sowing at 90 x 60 cm spacing	79	65.83	41	34.17	00	00.00
7.	Application of 50% N and full dose of P and K at the time of sowing	15	12.50	89	74.17	16	13.33
8.	Application of chemical fertilizers in soil at 5 to 10 cm depth	45	37.50	66	55.00	09	07.50
9.	Recommended dose of fertilizers (120:60:80 NPK kg per ha)	47	39.17	73	60.83	00	00.00
10.	Water req. (700-750 mm/ha)	16	13.33	104	86.67	00	00.00
11.	70 % management of water at the time of boll formation to opening of bolls	10	8.33	110	91.67	00	00.00
12.	2-3 sprayings of neemark after 15 days interval for biological pest control	00	00.00	00	00.00	120	100.0
13.	Control of sucking pest through spraying of 30 EC methyl dematon/Emidachloprid 400 ml at 15 days interval	64	53.33	56	46.67	00	00.00
14.	Cotton picking at morning hours	106	88.33	14	11.67	00	00.00

selection of medium to heavy and well drained soils (61.67 %) and control of sucking pests through application of insecticides such as methyl dematon/imidachloprid at 15 days interval (53.33 %). These findings are in line with the report made by Athwale (2008).

Great majority of the Bt cotton growers partially adopted irrigation practices such as 70% water management at the time of boll formation to proper opening of balls (91.67%) and supply of 700-750mm/ha irrigation water. All the Bt cotton growers (100%) not adopted 2-3 sprayings of neemark after 15 days of interval for biological pest control and 30.83% of them not adopted the recommended sowing period for cotton during 15 May to 5 June.

Overall adoption level:

It was noticed from Table 2 that most of the Bt cotton growers (71.67 %) belonged to medium level of adoption of Bt cotton production technology. However, 15 % and 13.33 % of the Bt cotton growers had high and low adoption level, respectively. These findings are supported by More (1997).

Constraints faced by the farmers in adoption of Bt cotton production technology:

Table 3 clearly indicates that all of the Bt cotton growers (100 %) expressed the constraints of non-

Table 2: Distribution of Bt cotton growers according to their level of adoption (n=120)			
Sr. No.	Category	Frequency	Per cent
1.	Low	16	13.33
2.	Medium	86	71.67
3.	High	18	15.00

Table 3 : Constraints faced by farmers in adoption of Bt cotton production technology (n=120)			
Sr. No.	Constraints	Frequency	Per cent
1.	Non-availability of labour for preparatory tillage and inter cultivation	120	100.00
2.	High cost seed	98	81.67
3.	Lack of money to purchase seed at proper time	117	97.50
4.	Lack of irrigation water	120	100.00
5.	Irregular supply of electricity	70	58.33
6.	High cost of fertilizers	120	100.00
7.	High cost of pesticides	120	100.00
8.	Non-availability of sufficient female labour for cotton picking	120	100.00
9.	Lack of sufficient knowledge about Bt-cotton production technology	55	45.83
10.	Non-availability of vermicompost	10	08.33

availability of labour for preparatory tillage and intercultivation, lack of irrigation water, high cost of fertilizers and pesticides and non-availability of sufficient quantity of female labour for cotton picking. While constraints like lack of money to purchase seed at proper time and high cost of Bt seed was expressed by 97.50 and 81.67 % Bt cotton growers respectively. Similar findings were reported by More (1997) and Shetwad (2000).

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