Biological Forum – An International Journal **15(10): 478-481(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

A Study on Socio-economic Status of Bt Cotton Growers of Marathawad Region of Maharashtra

Akash Laxman Ambhure[1], Swati Suman[2*] and Sanju Saha[2]
[1]M.Sc. Scholar, Department of Agricultural Extension & Communication, SHUATS, Prayagraj (Uttar Pradesh), India
[2]Ph.D. Scholar, Department of Agricultural Extension Education, MSSSoA, CUTM (Odisha), India.

(Corresponding author: Swati Suman)*
(Received: 30 July 2023; Revised: 29 August 2023; Accepted: 23 September 2023; Published: 15 October 2023)
(Published by Research Trend)

ABSTRACT: Cotton is one of the major cash crops of Marathawad region but it faces significant challenges, including considerable pest damage and low yields. Bt cotton appears to be a possible solution to these major issues. The present study on socio-economic status of cotton growers of Marathawad region of Maharashtra was carried on limited number of farmers. Hence the finding will not be generalized and applicable only to the research area. The study was taken up in Selu, Jintur and Pathri block of Parbhani district with a sample size of 120 respondents. The farmers interviewed personally by a well-structured interview schedule. The data was coded, tabulated and analyzed using suitable statistical tools. The profile of the farmers of Bt cotton reveals that majority of them were middle aged, educated up to high school, had 2 to 4 ha of land holdings, 0.33 to 1.41 ha of area under Bt cotton, medium level of annual income, medium level of social participation and medium level of economic motivation. The study may prove beneficial to the policy makers and stakeholders in decision making and agricultural development.

Keywords: Bt cotton, Marathawad region, Socio-economic status.

INTRODUCTION

Cotton is a vital crop for India's agricultural economy. Because of its high economic value, cotton—also referred to as "White Gold"—is one of the essential commercial fibre crops and plays a significant role in both the domestic and global economies. It is a significant cash crop and commercial crop in India, valued for its vegetable oil and fibre (Padwal *et al.*, 2018). It is also recognised as one of the most desired commercial cash crops in the country, guaranteeing the livelihood of millions of small-holder cotton farmers. India accounts for one-third of the world's 32 million hectares of cotton fields, accounting for 12 million hectares of total cultivated cotton area in 2012. India accounts for 21% of world cotton production, ranking second only to China. India boosted its contribution to world cotton production from 14% in 2002 to 24% in 2011-12. Production surged from 2.3 million bales (170 kg lint/bale) in 1947-48 to a prior record of 17.6 million bales in 1996-97 and an all-time high of 35 million bales during 2011-12.Cotton accounts for approximately 65% of the overall raw material requirements of India's textile sector. Cotton and textile exports make for about one-third of total foreign exchange earnings each year, valued at US$ 20,000 million according to a recent estimate. India has made considerable strides in cotton yarn exports, as well as increased its global market share in cotton textiles and apparel. Cotton employs and feeds about 60 million people who are directly or indirectly involved in cotton production, processing, textile, and associated industries. As a result, cotton production in India is thought to have a far-reaching impact not just on farmers' livelihoods and the country's economy, but also on international trade (Mayee and Choudhary 2013).

Bt is a genetically modified crop, it is also known as transgenic cotton. This Bt cotton has a toxic protein-inducing gene from the soil bore bacterium Bacillus thuringiensis, which allows the crop to produce a toxin that reduces the infestation of bollworms, reduces the need for insecticides, increases productivity, improves the quality of the fibre, and protects farmers (Bondarwad *et al.*, 2010). Bt cotton protects against boll worms from the start of the crop, resulting in a healthier crop, improved boll retention, a larger harvest, and higher profits. Bt cotton is a transgenic insect-resistant crop developed to battle the bollworm. The cotton genome was genetically altered to express a microbial protein from the bacteria *Bacillus thuringiensis*. The Genetic Engineering Approval Committee (GEAC), India's regulatory authority for transgenic crops, approved the commercial cultivation of Bt cotton cultivars Bt Mech12, Bt Mech162, and Bt Mech184 in March 2002. These types will be commercially grown in central and southern India in collaboration with the Maharashtra Hybrids Seeds

Company (MAHYCO). Cotton has the top spot among all cash crops in India. Cotton is a key raw material for the Indian textile industry, accounting for around 65% of its needs. With over 1500 mills, 4 million handlooms, 1.7 million power looms, and hundreds of garments, hosiery, and processing units, the Indian textile sector contributes significantly to the country's economy, employing around 35 million people directly or indirectly (Sankaranaryanan *et al.*, 2011).

Since its introduction, the area under Bt cotton has been steadily rising in all the states. Bt cotton was planted on 29072 hectares in the first year. It was increased fourfold in 2004 to more than 500,000 hectares (524,000 ha.). In 2005, the area covered by Bt cotton in India continued to grow, reaching 1.3 million hectares, a 160% increase over 2004.The major states growing Bt cotton in 2006, in order of hectarage, were Maharashtra (1.84 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 percent), and 215,000 hectares (6 percent) in Northern Zone and the balance in Karnataka and Tamil Nadu and other states (James, 2006).

MATERIALS AND METHODS

The study was conducted in Parbhani district of Marathawad region of Maharashtra in the year 2021-2022. For the study, the research design adopted was descriptive in nature. Research area was selected by purposive sampling technique, since Bt cotton is a major crop in the area. In Parbhani there are 9 talukas out of which Selu, Pathri and Jintur talukas were selected since it has major contribution in production of Bt cotton, in that talukas of Parbhani district there are 95, 57 and 172 villages, respectively. Out of which 4 villages from each taluka were selected on the basis of maximum area under Bt cotton. In the selected 12 villages, 10 Bt cotton grower were selected from each village which constitute total number of 120 respondents. The data was collected personally by using pre-structured interview schedule and analyzed using appropriate statistical tools like frequency, percentage, mean and standard deviation.

RESULTS AND DISCUSSION

The current study's findings and discussions have been summarised under the following headings:

Age: Data presented in Table 1 revealed that more than half (57.5 %) of the Bt cotton growers were from middle age group whereas 17.5 per cent Bt cotton growers belonged to young age group and 25 per cent Bt cotton growers belonged to the old age group. Similar findings were reported by Pavan *et al.* (2019). Thus, it could be inferred that a large proportion of Bt cotton growers belonged to middle age group which was considered as actively working age groups of Bt cotton growers.

Table 1: Distribution of Bt cotton growers according to their age.

Sr. No.	Age group	Frequency	Percentage
1.	Young (Upto 35 years)	21	17.50
2.	Middle (36 to 55 years)	69	57.50
3.	Old (56 years and above)	30	25.00
	Total	**120**	**100.00**

Educational status: Data in Table 2 showed that 46.66 per cent of the respondents were educated up to high school level. Whereas 24.16 per cent respondents had educated up to intermediate, remaining 12.50 per cent of respondents were educated up to primary level and 11.66 per cent respondents were graduate and only 5 per cent of respondents were illiterate. Similar findings were reported by Jakkawad *et al.* (2019). Thus, it was found that a majority of the Bt cotton growers had received high school and intermediate level of education. The individuals having higher education are more change oriented, take certain risks, more respective to new idea and have greater knowledge about an innovation.

Table 2: Distribution of Bt cotton growers according to their educational status.

Sr. No.	Educational status	Frequency	Percentage
1.	Illiterate	6	5.00
2.	Primary school education	15	12.50
3.	High school education	56	46.66
4.	Intermediate	29	24.16
5.	Graduate	14	11.66
	Total	**120**	**100.00**

Land holding: The data from the Table 3 reveals that about 42.5 per cent of the Bt cotton growers had medium size of land holding i.e., 2.01 to 4.00 ha while, 31.66 per cent of the Bt cotton growers had small size of land holding followed by large size (12.5%) and marginal size (13.33%) of land holding. Similar findings were reported by Shambharkar *et al.* (2018). Thus, it is seen from the findings that majority of the Bt cotton growers had medium size of land holding followed by small size of land holding. This is must be due to the fragmentation of land because of separation of families.

Table 3: Distribution of Bt cotton growers according to their size of land holding.

Sr. No.	Category	Frequency	Percentage
1.	Marginal l (up to 1.00 ha)	16	13.33
2.	Small (1.01 to 2.00 ha)	38	31.66
3.	Medium (2.01 to 4.00)	51	42.50
4.	Large (4.01 & above)	15	12.50
	Total	**120**	**100.00**

Area under Bt cotton: The data presented in Table 4 showed that majority (80.83%) of the respondents had medium area under Bt cotton, whereas, 11.66 per cent and 7.5 per cent respondents possessed large and small area under Bt cotton, respectively. Similar findings were reported by Waghmare (2020). Majority of the respondents had medium area under Bt cotton followed by large area this is due to the fact that Bt cotton gives higher return.

Table 4: Distribution of Bt cotton growers according to their area under Bt cotton.

Sr. No.	Category	Frequency	Percentage
1.	Small (up to 0.32 ha)	9	7.50
2.	Medium (0.33 ha to 1.41 ha)	97	80.83
3.	Large (1.42 & above)	14	11.66
	Total	**120**	**100.00**

Annual income: It could be seen from the Table 5 that three fourth (75%) of the Bt cotton growers were having medium annual income whereas 10.83 per cent and 14.66 per cent have low and high annual income respectively. Thus, it is seen form the data that majority of Bt cotton growers had medium annual income ranging from Rs.54,023 to Rs. 1,54,212 /-. Similar findings were also reported by Prasad *et al*. (2018). It was found that majority of the respondents had medium annual income this could be due to the fact that majority of the Bt cotton growers small and medium farmers that too without any other source of income but few had high annual income due to their comparatively good land holding size with additional sources of income as job or business.

Table 5: Distribution of Bt cotton growers according to their annual income.

Sr. No.	Category	Frequency	Percentage
1.	Low < 54022	13	10.83
2.	Medium (54023 to 154212)	90	75.00
3.	High (>154213)	17	14.66
	Total	**120**	**100.00**

Social participation: It would be inferred from the Table 6 that majority (52.5%) of the Bt cotton growers had medium level of social participation, subsequently 30.83 per cent had low level of social participation and only 16.66 per cent of Bt cotton growers had high level of social participation. Similar findings were reported by Waghmare (2020). It was found that majority of the respondents had medium level of social participation due to lack of interest and time, non-attractiveness of the activities undertaken by the organization and local politics prevailed in the villages.

Table 6: Distribution of Bt cotton growers according to their social participation.

Sr. No.	Category	Frequency	Percentage
1.	Low (Score up to 4)	37	30.83
2.	Medium (Score 5 to 8)	63	52.50
3.	High (Score 9 & above)	20	16.66
	Total	**120**	**100.00**

Economic motivation: The data in Table 7 found that the majority (65.84%) of the respondents had a medium level of economic motivation followed by 19.16 percent of the respondents had a low level of economic motivation and only 15 per cent of respondents had a high level of economic motivation. Similar findings were reported by Maske (2019). Thus, it was found that majority (65.84%) of the respondents had a medium level of economic motivation the probable reason might be due to they had medium exposure with extension personnel, local extension workers.

Table 7: Distribution of Bt cotton growers according to their economic motivation.

Sr. No.	Category	Frequency	Percentage
1.	Low (<7)	23	19.16
2.	Medium (8-14)	79	65.84
3.	High (>15)	18	15.00
	Total	**120**	**100.00**

CONCLUSIONS

It was concluded from the above analysed data that majority of the Bt cotton growers (57.5%) were from middle age group (36 to 55 years) and most of them (46.66 %) were educated up to high school level. Most (42.5%) of the Bt cotton growers had medium size of land holding i.e., 2.01 to 4.00 ha and majority (80.83%) of the respondents had medium area under Bt cotton. Three fourth (75%) of the Bt cotton growers were having medium annual income i.e., Rs. 54,023 to Rs.1,54,212. Majority (52.5%) of the Bt cotton growers had medium level of social participation and majority (65.84%) of the respondents had a medium level of economic motivation. The data reveals the socio-economic status of the cotton growers of Marathawad region which will further help policy makers and other stakeholders in decision making and agricultural and rural development.

FUTURE SCOPE

The result found in this study will help the policy makers in taking appropriate decisions for farmers and increasing their socio-economic status.

Acknowledgement. I sincerely express my gratitude to the respondents of Marathawad region of Maharashtra for their cooperation during data collection and I also express my thanks to SHUATS for providing me necessary facilities during writing the paper.
Conflict of Interest. None.

REFERENCES

Bondarwad, S. P., Wangikar, S. D. and Deshmukh, N. D. (2010). Present status of adoption of Bt cotton production technology by farmers. *Agriculture Update, 5*(3 and 4), 322-324.

Jakkawad, S. R., Patange, N. R. and Kadam, S. B. (2019). Extent of adoption of practices by cotton growers for the management of pink bollworm. *Trends in Biosciences, 12*(3), 246-250.

James, C. (2006). Global status of commercialized biotech/GM crops, The International Service for the Acquisition of Agri-biotech Applications (ISAAA) brief, 35. Available on World Wide Web.

Maske, P. N. (2019). Utility perception of Pradhan Mantri Fasal Bima Yojana. M.Sc. (Agri) Thesis, MPKV, Rahuri.

Mayee, C. D. and Chaudhary, B. (2013). Adoption and Uptake Pathways of Bt Cotton in India, Indian Society for Cotton Improvement (ISCI) Mumbai, India, Oct. 2013

Padwal, D., Jahanara, Mazhar, S. H., Bose, D. K. and Srivastava, J. P. (2018). A study on knowledge of BT cotton cultivation practices in Rangareddy district of Telangana. *Journal of Pharmacognosy and Phytochemistry*, *7*(3), 2204-2205.

Pavan Kumar, P., Dhorey, R. K. and Singh, S. N. (2019). Profile Characteristics of Farmers in Adoption of Bt. Cotton. *Int. J. Curr. Microbiol. App. Sci.*, *8*(01), 2373-2378.

Prasad, P. V., Rao, B. M., Sivanarayana, G. and Rao, C. P. (2018). A Study on Profile Characteristics of Farmers on No-Till Maize Technology. *Int. J.Curr. Microbiol. App. Sci*, *7*(04), 1696-1701.

Sankaranaryanan, K., Nalayini, P., Sahesh, M., Usha Rani, S., Nachane, R. P., Gopalkrishnan, N. (2011). Low-Cost Drip-Effective and Precision Irrigation Tool in Bt cotton, Technical Bulletin No. 1/2011.

Shambharkar, Y. B., Bhopale, P. P. and Sarnaik, S.D. (2018). Impact of Integrated Pest Management Technology on Cotton Growers. *Int. J. Curr. Microbiol. App. Sci*., *6*, 2731-2736.

Waghmare S. R. (2020). Adoption of drip irrigation management practices by bt cotton growers. M.Sc. (Agri.) Thesis, VNMKV Parbhani.

How to cite this article: Akash Laxman Ambhure, Swati Suman and Sanju Saha (2023). A Study on Socio-economic Status of Bt Cotton Growers of Marathawad Region of Maharashtra. *Biological Forum – An International Journal*, *15*(10): 478-481.