

Consequence of Farmer's Attributes on their Attitude towards Bt Cotton

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Introduction

Cotton is one of the most important commercial crops playing a key role in economic, political and social affairs of the world. Due to its importance in agricultural as well as industrial economy, it is also called "white gold". Cotton is cultivated in about 60 countries in the world and India ranks first in area and production in the world, albeit with low productivity. Bt Cotton is an important biotechnological intervention that has become controversial because of its implications for risk, safety, sustainable development and ethical issues (Karthikeyan, 2007). The use of Bt cotton is a positive step towards environmental protection because it makes possible the reduction of insecticide load in the environment and reduces the handling of such chemicals by farmers. On the other hand genetical contamination, health impacts and compatibility to the Indian environment are the most common arguments among the biodiversity experts against Bt technology. In this regard the consequences perceived by the cotton growers due to adoption of Bt. cotton are a very crucial aspect.

In 2005, India had the largest proportional increase in area from 5 lakh hectares during 2004 to 13 lakh hectares, exclusively in Bt Cotton . This has brought down the sale of non- Bt Cotton seeds from 15 lakh packets last year to five lakh packets. (Anonymous, 2006).

The fact that a million farmers in the country have elected to plant Bt Cotton in 13 of the 90 lakh hectares in 2005 is a classic example of the positive attitude to Bt Cotton among the Indian farmers. If a farmer has a positive attitude regarding Bt Cotton it can be expected that he may adopt it when a favorable situation arises. The attitude of farmers may have some association with their personal socio-economic and psychological characteristics. If this association is ascertained, it may be possible to draw out certain inferences about attitude towards Bt Cotton. Keeping in view these points, the study was conducted with the following objectives:

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1. To find out the attitude of the farmers Bt Cotton.
2. To find out the relationship between some of the selected characteristics of the farmers and their attitude towards Bt Cotton.

Methodology

The present study was undertaken on a random sample of 150 farmers of ten purposively selected villages of Mehsana Taluka of Mehsana district of Gujarat State. This Taluka was selected purposively since various programmes on cotton cultivation were implemented by the State Government and KVK through Cotton Mini Mission-II since the past few years in the district. It is one of the potential areas, where agriculture is well developed, because a majority of the population of the district is dependent upon Agriculture and Animal husbandry. The farmers in the region are progressive and adopt new technologies in their farming. Thus, many of the cotton growers of this taluka have adopted Bt-Cotton since the last 4-5 years. Hence it was felt appropriate to know the attitude of the cotton growers about Bt Cotton. The statistical methods like Mean, Standard Deviation and Co-efficient of Correlation were used to analyze the data.

Results and Discussion

Attitude of the Farmers towards Bt Cotton

A look at Table 1 reveal that 48.00 per cent of the cotton growers had neutral attitude followed by 31.33 per cent and 20.67 per cent of them who had high favourable and low favourable attitude respectively.

Table 1. Distribution of Cotton Growers according to their level of Attitude towards Bt Cotton

N= 250

Sl. No.	Category	Frequency	Per cent
1.	Negative attitude (Below 40 score)	31	20.67
2.	Neutral attitude (40.00 to 78.00 score)	72	48.00
3.	High favourable attitude(Above 78.00 score)	47	31.33
	Total	150	100.00

It can be concluded from the above table that majority of the Bt Cotton growers had neutral to high favourable attitude towards Bt Cotton. This may be due to extensive cultivation of Bt Cotton variety in this region due to less attack of boll worms, which reduces cost of cultivation.

Consequence of Farmers' Attributes on their Attitude towards Bt Cotton

With a view to studying the consequence of the farmers' attributes on their attitude towards Bt Cotton, coefficient of correlation was worked out and results obtained are presented in Table 2.

1. Age and Attitude towards Bt Cotton

The results of the study revealed negative and significant relationship between the age of the respondents and their attitude towards Bt Cotton. This means, that the degree of attitude towards Bt Cotton was found to be more positive with decrease in their age. The young farmers have higher education, modern view, enthusiasm, scientific inspiration, are active and have the ability to understand scientific technology than old age farmers, which might have played a role in their having a more positive attitude towards Bt Cotton.

Table 2. Consequence of Farmers' Attributes on their Attitude towards Bt-cotton

Sl No.	Characteristics [Independent variables]	'r' Value (Correlation coefficient)
A. Personal Characteristics		
1.	Age	-0.2228*
2.	Education	0.1527*
3.	Experience in farming	0.2317*
B. Social Characteristics		
4.	Type of family	-0.2019*
5.	Caste	0.0815 NS
6.	Social Participation	0.0369 NS
7.	Extension contact	0.2649*
C. Economic Characteristics		
8.	Occupation	-0.2861*
9.	Size of land holding	0.1802*
10.	Annual income	0.0152 NS
11.	Irrigated area	0.1127 NS
D. Psychological Characteristics		
11.	Scientific orientation	0.4708*
13.	Risk orientation	0.2860*
14.	Economic motivation	0.2536*

*denotes Significant at 0.05 % level of probability, and NS=Non significant

2. Education and Attitude towards Bt Cotton

The data in Table 2 shows a positive significant association between education and attitude of the cotton growers towards Bt Cotton. The result reflects that the attitude of the farmers towards Bt Cotton was observed to be favourable among those farmers who had a higher level of formal education. A higher level of education provides better ability to an individual to understand modern improved scientific technologies. Bt Cotton is a new variety developed from gene transferred which requires an understanding regarding maintenance of Bt and Non-Bt lines for better performance in the field. Formal education provides more opportunities to understand it. Hence, a favourable attitude towards Bt Cotton was observed among those farmers who had a higher level of formal education. In addition to this, because of higher education, there are more chances of exposure to written form of communication media and other advanced technologies like Internet. This provides greater opportunities to a person, to acquire information on latest trends in science and technology of crop production. This might be the possible reason for the above result.

3. Experience in Farming and Attitude towards Bt Cotton

Positive correlation was observed between experience in farming and attitude of the farmers towards Bt Cotton. This fact indicates that the degree of attitude towards Bt Cotton was found more positive among those farmers, who had higher experience in farming. Due to the high level of experience, farmers are able to know the benefits of improved technologies in crop production. The experienced farmers become more enthusiastic in adoption of new technology and get better economic returns. Due to their interest in new things they have better understanding of new innovations. The same possibility was observed here also.

4. Type of Family and Attitude towards Bt Cotton

The presentation of the data in Table 2 reveals that there was negative significant relationship between type of family and attitude of the farmers towards Bt Cotton. The farmer with the nuclear type of the family had a positive attitude towards Bt cotton. This might be because the head of the nuclear family may be young and educated. Due to the higher level of formal education he may be more enthusiastic in the use and adoption of the latest technologies. This type of farmer is mostly found to be cosmopolite, with scientific orientation and economic motivation.

5. Caste and Attitude towards Bt Cotton

The results show that caste of the farmers and their attitude towards Bt Cotton was found non-significantly associated. This means that the degree of attitude towards

Bt Cotton was observed to be almost similar among the farmers from different castes, whether from higher caste or lower caste. The result indicates that because of the advantageous quality of Bt Cotton, it was accepted by farmers of all castes.

6. Social Participation and Attitude towards Bt-Cotton:

The presentation of the results in Table 2 shows that social participation of the farmers and their attitude towards Bt Cotton was found Non-significantly associated. This means that the degree of attitude towards Bt Cotton was observed almost similar between the members and non-members of the social institutions. Due to the economically advantageous nature of Bt Cotton due to less need of pesticides, the member and non-member farmers of the social institutions might have understood the importance of Bt cotton. Thus it can be said that that organizational participation of the farmers had no impact on their attitude towards Bt Cotton.

7. Extension Contact and Attitude towards Bt Cotton

The information in Table 2 indicates that the relationship between extension contact of the cotton growers and their attitude towards Bt Cotton was found positive and significant. It indicates that the farmers with more degree of extension contact with extension personnel had a more positive attitude towards Bt Cotton than the farmers with low extension contact. The farmers with more contact with extension personnel are getting more opportunity to receive the latest knowledge and information. More knowledge means more understanding regarding the latest facts and technology. More understanding makes man more positive towards a particular issue. This might be the reason for more positive attitude among those farmers who had more contact with extension personnel.

8. Occupation and Attitude towards Bt Cotton

The data presented in Table 2 show that, occupation of the farmers and their attitude towards Bt- Cotton reflects negative but significant relationship. This means that, as the number of occupations of the farmer decreases, his attitude towards Bt Cotton becomes more positive. It is a natural phenomenon that when a person is engaged in more than one activity he cannot perform well in all the activities. When one concentrates on a particular activity he can get better results. The same can be applied in the case of cotton growers. When the farmer is engaged in lesser number of occupations or say only in farming, he will try to be positive in matters related to his farming occupation from which he may get more economic returns. This may be the possible cause for the negative and significant relationship between occupation and the attitude of the farmers towards Bt Cotton.

9. Size of Land Holding and Attitude towards Bt Cotton

The results on the relationship between size of land holding and the attitude of the farmers towards Bt Cotton show positive and significant association. This means that with more size of land holding possessed by the farmers, they become more positive towards Bt Cotton. It is obvious that the farmer with more land holding is economically sound, and in this situation he will go for adoption of more than one crop on his land. Due to higher acreage of land, he has the choice to grow different varieties on his own farm; hence more positive attitude towards Bt Cotton. This may be the possible reason for positive significant association between land holding and farmer's attitude towards Bt Cotton.

10. Annual income and Attitude towards Bt Cotton

The data in table 2 shows that annual income of the farmers and their attitude towards Bt Cotton was found positively and non-significantly associated. It means that the degree of attitude towards Bt Cotton observed was almost similar between the farmers who were from a higher income group or farmers from a low income group. Thus it can be said that that annual income of the farmers had not shown its impact on their attitude towards Bt Cotton.

11. Irrigated area and Attitude towards Bt Cotton

The results show that irrigated land holding of the farmers and their attitude towards Bt Cotton was found non-significantly associated. This means that the degree of attitude towards Bt Cotton observed was almost similar between the farmers who had less or more irrigated area on their farm. This is because of the fact that a majority of the farmers from north Gujarat have cooperative based tube well facilities and they are well aware about water harvesting techniques.

12. Scientific Orientation and Attitude towards Bt Cotton

The results on the relationship between scientific orientation and the attitude of the farmers towards Bt Cotton shows positive and significant association. This means that with more degree of scientific orientation, the farmer becomes more positive towards Bt Cotton. As in the case of Bt Cotton, though it gives more returns per unit area, it requires proper technical knowledge and information regarding scientific cultivation and package of practices for getting more returns per unit area. The scientifically oriented farmers are likely to have more inclination to use scientific methods in farming. They have a

favourable perception towards innovations and this leads them to adopt more improved varieties. This may be the possible reason for positive significant association between scientific orientation and farmer's attitude towards Bt Cotton.

13. Risk Orientation and Attitude towards Bt Cotton

The data in table 2 reflects that the relationship between risk orientation and attitude of the farmers towards Bt Cotton was positive and significantly associated. This means with more degree of risk orientation, the farmer becomes more positive towards Bt Cotton. This is because of the fact that risk orientation is a degree to which a farmer is oriented to take risk and has courage to face the uncertainties in adoption of the new and latest technology in the field of his interest. A farmer, who is having a particular trait, normally will have better knowledge and ultimately do better for getting better economic returns. This may be the possible reason for positive significant association between risk orientation and farmer's attitude towards Bt Cotton.

14. Economic Motivation and Attitude towards Bt Cotton

The results for the relationship between economic motivation and the attitude of the farmers towards Bt Cotton shows positive and significant association. This means that, the greater the degree of economic motivation, the more positive is the farmer towards Bt Cotton. In the case of Bt Cotton, since it gives more returns per unit area, though there is initially more expenditure incurred in purchase of the seed and other primary inputs, farmers with greater economic motivation tend to take initial risks.

Conclusion

From the above findings it can be concluded that a majority of the farmers had neutral attitude towards Bt Cotton. Young farmers with experience of farming and better education were found to have a more positive attitude towards Bt Cotton. Negative and significant association was observed between type of family, occupation and the attitude of the farmers towards Bt Cotton. Caste, Social participation, Irrigated land holding, annual income were found non-significantly related with the attitude of the farmers towards Bt Cotton. Positive and significant correlation was found between economic motivation, extension contact, land holding, risk orientation, scientific orientation and the attitude of the farmers towards Bt Cotton.

The extension agency can use these criterion in building a favourable attitude towards Bt Cotton among the farmers.

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