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## Profile of Bt cotton growers about management orientation of Bt cotton in Yavatmal district

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### Abstract

The present investigation was carried out in Yavatmal district of the Maharashtra state. The study was conducted in, Yavatmal, Ner and Darwha, tehsils which were selected purposively on the basis of maximum area under Bt cotton. From each tahsil 10 villages were purposively selected based on maximum area under Bt cotton and from each selected village, 10 farmers were selected randomly. The structured schedule was developed keeping in view the objectives & variables under study. Majority of farmer were middle age group educated up to Secondary school (8<sup>th</sup>-10<sup>th</sup>) and had Small (1.01 to 2.00 ha) land holding. It was observed that in case of experience of Bt cotton cultivation, Area under Bt cotton, Annual income, Extension contact, Mass media exposure Economic and risk orientation maximum respondents were fall in medium category.

**Keywords:** Bt cotton, profile, Yavatmal, cultivation

### Introduction

Cotton is one of the most important commercial crops playing a key role in economic, political, social affairs of the world. India has the distinction of having the largest area under cotton cultivation which is about 41% of the world area under cotton cultivation between 12.50 million ha. to 13 million ha. India's productivity (yield per unit area), is much lower than other major cotton-producing countries, meaning a much larger area is used for cotton production. In India Maharashtra is second largest producer of Bt cotton in India accounting as 86 lakh bales (2020-21). In Maharashtra state Jalgaon district was highest actual sowing area (5.30 lakh ha.) of cotton. Yavatmal district has second (4.65 lakh ha.) actual sowing district of cotton. Yavatmal district has highest producer of Bt cotton in Maharashtra. (Source: [www.krishi.maharashtra.gov.in](http://www.krishi.maharashtra.gov.in)) The Bt cotton contains a foreign gene obtained from a bacteria called *Bacillus thuringiensis*, which is an aerobic bacterium characterized by its ability to produce crystalline inclusions during sporulation. This bacterium is a natural enemy of the boll worm, a major pest (Aphids, Jassids and Whiteflies) of cotton. The 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. In India and the US, Bt cotton initially alleviated the issues with pests whilst increasing yields and delivering higher profits for farmers. Studies showed that the lower levels of pesticide being sprayed on the cotton crops promoted biodiversity by allowing non-target species like ladybirds, lacewings and spiders to become more abundant. Likewise, it was found that integrated pest management strategies (IPM) were becoming more effective due to the lower levels of pesticide encouraging the growth of natural enemy populations. It was seen from Table 1 that, near about two third (64.17%) of the Bt cotton growers had belonged to middle age category followed by young age (20.00%) and old age (15.83%) respectively. A probable reason might be that breadwinner for their family and support the family financially. Middle age farmers are energetic and more responsible the result are in consonance with the finding of Jakkawad and Patange (2019) [2]. Results presented in Table 1 revealed that, more than half (55.83%) of the respondents had belonged to secondary school category followed by higher school (15.83%), graduation (11.67%), primary school (09.17%) and illiterate (07.50%) respectively. From the above data, it can be concluded that majority of respondents had belonged to secondary and higher school level education. The probable reason might be that more awareness about education in villages. Education facility is available in villages or villages are near to city.

**Table 1:** Profile characteristics of cotton grower

Sr. No.	Category	Respondents (n=120)	
		Frequency	Percentage
<b>Age</b>			
1	Young age (Up to 37)	24	20.00
2	Middle age (38 to 64)	77	64.17
3	Old age (Above 64)	19	15.83
<b>Education Level</b>			
1	Illiterate	09	07.50
2	Primary School (1 <sup>st</sup> -7 <sup>th</sup> )	11	09.17
3	Secondary school (8 <sup>th</sup> -10 <sup>th</sup> )	67	55.83
4	Higher school (11 <sup>th</sup> -12 <sup>th</sup> )	19	15.83
5	Graduation and post-graduation	14	11.67
<b>Experience of Bt cotton cultivation.</b>			
1	Low (Up to 14)	24	20.00
2	Medium (14 to 41)	79	65.83
3	High (Above 41)	17	14.17
<b>Land holding</b>			
1	Marginal (Up to 1.00 ha)	05	04.17
2	Small (1.01 to 2.00 ha)	52	43.33
3	Semi medium (2.01 to 4.00 ha)	35	29.17
4	Medium (4.01 to 10.00 ha)	24	20.00
5	Big (Above 10.00 ha)	04	03.33
<b>Area under Bt cotton</b>			
1	Low (Up to 0.60 ha)	07	05.83
2	Medium (0.61 to 3.00 ha)	98	81.67
3	High (Above 3.00 ha)	15	12.50
<b>Annual income</b>			
1	Low (Up to Rs. 38814)	00	00
2	Medium (Rs. 38815 to 375828)	98	81.67
3	High (Above Rs. 375828)	22	18.33
<b>Extension contact</b>			
1	Low (Up to 12)	25	20.83
2	Medium (13 to 20)	80	66.67
3	High (Above 20)	15	12.50
<b>Mass media exposure</b>			
1	Low (Up to 7)	36	30.00
2	Medium (8 to 12)	66	55.00
3	High (Above 12)	18	15.00
<b>Economic motivation</b>			
1	Low (Up to 19)	27	22.50
2	Medium (20 to 23)	83	69.17
3	High (Above 23)	10	08.33
<b>Risk orientation.</b>			
1	Low (Up to 16)	37	30.83
2	Medium (17 to 22)	63	52.50
3	High (Above 22)	20	16.67

Education could be change the attitude and enhance the knowledge about new innovation. The result gets support from the finding of Ghuge (2018) [12]. It was observed that majority (65.83%) of the Bt cotton growers had medium farming experience followed by low (20.00%) and high (14.17%) farming experience. Thus, it concluded that majority of Bt cotton growers had belonged to middle age group. The probable reason might be that they have proper knowledge of management, risk bearing ability and more responsible. Similarly studies of Prathyusha (2014) [10], Shaik (2015) [11] and Jakkawad and Patange (2019) [2]. The landholding refer to the total land possessed by the family of the respondents in a hectare. The respondents were grouped into five categories as per the Government of Maharashtra. From table 1 it was evident that, more than one third (43.33%) of the Bt cotton growers comes in 'small' land holding, followed by 'semi medium' (29.17%), 'medium' (20.00%), 'marginal' (04.17%) and 'big' (03.33%) size of

land holding respectively. The probable reason might be that ancestral transfer of land holding from generation to generation. Another reason could be that fragmentation of families and division of land. The result is in consonance with the finding of Shambharkar *et al.* (2019) [13]. It was seen from Table 1 that, majority (81.67%) of the Bt cotton growers had belonged to medium area under Bt cotton growers followed by high (12.50%) and low (05.83%) area under Bt cotton growers. A probable reason could be that Bt cotton have suitable climatic condition in this area and also have availability of market facility. Therefore majority of the farmers belonged to medium to high area under Bt cotton. The result gets support from the finding of Jakkawad and Patange (2019) [2] and Shinde *et al.* (2020) [11] It was clear from Table 1 that, majority (81.67%) of Bt cotton growers had medium annual income followed by high (18.33%) and none of them had low annual income.

Thus, it was seen from the data that majority of Bt cotton growers had medium to high annual income ranging from Rs. 38,814 to 3,75,828 and above Rs. 375828. Better economic condition of respondents had led to high investment in farming; timely supply input. Farmers had taking Bt cotton crop as major crop and get for good price in market, hence more respondent had medium to high annual income. Above result are similar to Bondarwad *et al.* (2010) [7], (2015). Extension contact refers to the frequency with which the farmer comes in contact with the extension agency workers. Extension contact of the Bt cotton growers were categorized into three groups. It was observed that from Table no 1 more than half (66.67%) of Bt cotton growers had medium level of extension contact followed by low (20.83%) and high (12.50%) level of extension contact. The probable reason could be that education of the Bt cotton growers had secondary school to graduation and post-graduation level. Mass media exposure of the Bt cotton growers had medium. So that good communication between Bt cotton growers and extension contact.

The results are in consonance with the finding of Laxmi (2012) [3], Shaik (2015) [11] and Jakkawad and Patang (2019) [2]. Mass media are those means of communication, which reach and influence a large number of people within a short period. Exposure of respondents to mass media namely newspaper, extension publication, weekly paper, agricultural magazine, agriculture film, radio, television, kisan call centre, internet were considered for the purpose of the study. It was notified from Table 1 that, more than half (55.00%) of Bt cotton growers had medium mass media exposure followed by low (30.00%) and high (15.00%) level of mass media exposure. Respondents were gathering information and increases awareness about new technology from different mass media sources. Better economic conditions of farmers were enhancing the use of different mass media sources. Educational qualification of respondents might be impact on mass media exposure. Thus, the mass media exposure helps the farmers to upgrading their agriculture knowledge. The result gets support from the finding of Laxmi (2012) [3], Pawar *et al.* (2016) [4], Sumit (2017) [5] and Shinde *et al.* (2020) [11] It was seen from Table 1 that, majority (67.17%) of Bt cotton growers comes in medium level of economic motivation followed by low (22.50%) and high (08.33%) levels of economic motivation. Respondents are more oriented toward market, to investments in farming and get more production in terms of money. Annual income of the farmers had medium to high so that better financial condition might be enhance the

economic motivation and achieve their farming goal. The results are in similar with the finding of Waghmare (2020)<sup>[9]</sup> and Deshmukh and Ghuge (2021)<sup>[8]</sup>. More than half (52.00%) of Bt cotton growers had medium level of risk orientation followed by low (30.83%) and high (16.67%) levels of risk orientation. The probable reason was seen that, annual income of the Bt cotton growers were medium to high so that better economic condition of the respondents were help in taking more risk. Area under Bt cotton growers were medium to high. Respondents were taking risk and getting more profit and increase standard of living. The results are in consonance with the finding of Bondarwad *et al.* (2010)<sup>[7]</sup>, Deore (2015)<sup>[6]</sup> and Sumit (2017)<sup>[5]</sup>.

### Conclusion

In case of profile character of cotton grower majority of farmers had medium age, experience of Bt cotton cultivation, area under Bt cotton growers 0.61 to 3.00 ha, annual income i.e. Rs. 38815 to 375828, extension contact, mass media exposure, risk orientation, economic motivation. More than half (55.83%) of the respondents had belonged to secondary school category More than one third (43.33%) of the Bt cotton growers comes in 'small' land holding.

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