Economic performance of *Bt* cotton growers in Belagavi district

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ABSTRACT: A total of 120 *Bt* cotton growers were selected by using simple random technique from 6 villages of 2 taluks. The results revealed that majority of the *Bt* cotton growers (63.33 %) were belonged to medium level of economic performance followed by 22.50 per cent and 14.17 per cent of them were belonged to low and high level, respectively. Experience in *Bt* cotton cultivation, land holding, annual income, extension participation, mass media exposure and economic motivation and innovative proneness had positive and significant relationship with economic performance. Thus, development departments should intensify the extension educational activities and motivate the farmers to adopt the recommended practices to improve their economic performance. The extension personnel should select the target groups for these activities by considering the positive and significantly related characteristics to improve economic performance of *Bt* cotton growers.

Key words: *Bt* cotton, economic performance, extension activities, recommended cultivation practices

Cotton (*Gossypium sps*) the "White Gold" and "King of Fibers" is cultivated in tropical and subtropical regions of more than 70 countries across the world and enjoys a predominant position amongst all cash crops in the world.

Cotton plays a key role in the national economy in terms of generation of direct and indirect employment in agriculture and industrial sectors. Cotton textiles and its related exports constitutes nearly 65 per cent, accounting for nearly 33 per cent of the country's total foreign exchange earnings is around 17 billion dollars with a potential for a significant increase in the coming years. This clearly stresses the need for further efforts to increase productivity of the most important commercial crop of the country.

In Karnataka, *Bt* cotton occupies an area of 7.60 lakh ha with a production of 26.90 lakh bales with a productivity of 626 kg/ha. The predominant *Bt* cotton growing districts are Haveri, Belagavi, Dharwad, Raichur, Gadag, Kalaburagi, Davangere, Bellary and Mysuru. In Belagavi district, *Bt* cotton cultivated an area of 22,675 ha and production 84,455 t and productivity of 394 kg/ha.

Cotton crop is infested by various pests. Among the pests, cotton bollworms *viz.,,* American bollworm, pink bollworm and spotted bollworms cause significant yield losses. About 10 per cent of insecticides on global basis and 45 per cent in India are used to control of insect pests in cotton (Singh and Kaushik, 2007). The desperate situation faced by cotton farmers due to pest damage and the consequent suicides by many of the cotton farmers led to search for solutions. Application of biotechnology for developing pest resistance in cotton is one among them that appears to hold promise. *Bt* cotton was introduced in India to reduce the pesticide consumption. The farmers are adopting *Bt* cotton technology to reduce the pest damage and the cost of production Therefore, cultivation is spreading steadily in terms of area and production. To realize the maximum potential yield and income, studying the economic performance of *Bt* cotton growers is important . With this back ground, the present study was under taken with the following specific   objectives

• To study the economic performance of *Bt*

cotton growers

• To know the relationship between the personal and socio economic characteristics of *Bt* cotton growers with their economic performance

The present study was conducted in two taluks of Belagavi District based on maximum area under *Bt* cotton cultivation. Three villages from each taluk were selected based on the criterion of maximum area under *Bt* cotton. From each village, a list of *Bt* cotton growers was prepared with the help of Agricultural Assistants and 20 respondents from each village were selected by using simple random technique thus making a total sample of 120. Data were collected by using structured pre tested interview schedule by personal interview method. Analysed the data by using appropriate statistical tools.

Economic performance is defined as the ratio of value of output to total expenditure incurred to *Bt* cotton crop for a period of one year.

The total expenditure incurred was estimated by considering the expenditure on inputs, labour, electricity, repair and maintenance and miscellaneous for a period of one year. The value of total output realized was estimated by considering the revenue obtained from the sale of *Bt* cotton for a period of one year. It is expressed in index value. Economic Performance Index (EPI) for an *Bt* cotton grower was calculated by using the following formula

$$EPI = \frac{\text{Value of total output in rupees for a period of one year}}{\text{Total expenditure in rupees incurred for a period of one year}} \times 100$$

Total expenditure in rupees incurred for a period of one year based on the Economic Performance Index (EPI), the *Bt* cotton growers were grouped into three categories with mean (246.11) and standard deviation (134.29) as a measure of check.

Category	Criteria	Score
Low	<(Mean-½SD)	<178.96
Medium	(Mean± ½SD)	178.96-313.25
High	>(Mean+½SD)	>313.25

Economic performance of *Bt* cotton growers : It can be observed from Table 1 that majority of the respondents (63.33%) were found to be in medium level of economic performance. Whereas, 22.50 per cent and 14.17 per cent of the respondents were belonged to low and high level of economic performance, respectively. The possible reasons might be due to low cost of inputs, good market price for the produce and better marketing facilities. Further, socio economic characteristics like land holding, annual income, extension participation etc. might have also contributed for medium level of economic performance of the *Bt* cotton growers. The findings are in conformity with the results of Gopala (2006), Ganeshprasad (2010),Harish (2010), Laxmi (2012) and Nayak (2014).

Relationship between personal and socio economic characteristics of *Bt* cotton growers with their economic performance : It is observed from Table 2 that the variables such as experience in *Bt* cotton cultivation, land holding, annual income, mass media exposure, extensi*on par*ticipation, economic motivation and innovative proneness were found to be positive and significant relationship with economic performance of the respondents.. Other variables *viz.,,* age, education, area under *Bt* cotton, extension contact and scientific orientation had a non-significant relationship with economic performance of the respondents.

The possible reasons might be that increased experience of an individual would help to minimize the production costs, the large size of landholder have more opportunity to adopt more technically sound practices and although farmers were derived most of the income from *Bt* cotton cultivation. Further, mass media provides

Table 1. Economic performance of *Bt* cotton growers (N= 120)

Economic performance	Criteria	Number	Percentage
Low	Less than 178.96	27	22.50
Medium	Between178.96 to 313.25	76	63.33
High	More than 313.25	17	14.17
Total		**120**	**100**

Mean:246.11; SD:134.29

Table 2. Relationship between personal and socio-economic characteristics of *Bt* cotton growers with their economic performance (N= 120)

Sl. No.	Characteristics	Correlation co efficient (r)
1	Age	0.132[NS]
2	Education	0.129[NS]
3	Experience in *Bt* cotton cultivation	0.187*
4	Land holding	0.215*
5	Area under *Bt* cotton	0.097[NS]
6	Annual income	0.182*
7	Mass media exposure	0.219**
8	Extension contact	0.057[NS]
9	Extension participation	0.184*
10	Economic motivation	0.265**
11	Scientific orientation	0.068[NS]
12	Innovative proneness	0.186*

* Significant at 0.05 per cent level of probability
** Significant at 0.01 per cent level of probability
NS= Non significant

enormous opportunity for repeated exposure to new technologies and motivating growers. the frequent participation in extension activities, higher desire to achieve economic gain and *Bt* cotton growers had better ability to try new practices and strive hard towards adopting those practices earlier than the others members of the society. The findings are inline with the findings of Gopal (2006) Thippeswamy(2007), Harish (2010), Latha(2003) and Laxmi (2012)

Multiple regression analysis of independent variables with economic performance of *Bt* cotton growers : In respect of contributions of all the personal and socio economic characteristics of *Bt* cotton growers to variation in economic performance is given in Table 3. The results indicated that all the 12 variables contributed to 51.60 per cent of the variation in the economic performance of *Bt*

Table 3. Multiple regression analysis of independent variables with economic performance of *Bt* cotton growers (N= 120)

Sl. No.	Characteristics	Regression coefficient(B)	Standard error	t value
1	Age	0.530	1.408	0.376[NS]
2	Education	11.007	12.635	0.871[NS]
3	Experience in *Bt* cotton cultivation	15.407	12.092	1.274[NS]
4	Land holding	3.754	1.460	2.571*
5	Area under *Bt* cotton	2.972	6.570	0.452[NS]
6	Annual income	10.163	3.586	2.834**
7	Mass media exposure	10.186	4.574	2.227*
8	Extension contact	14.539	6.816	2.133*
9	Extension participation	3.311	6.997	0.473[NS]
10	Economic motivation	10.163	3.811	2.666**
11	Scientific orientation	2.326	5.977	0.389[NS]
12	Innovative proneness	3.122	0.947	3.296**

R^2 =0.516, F (12,107) = 6.305**, NS = Non-Significant, * Significant at 0.05 per cent level of probability, ** Significant at 0.01 per cent level of probability

cotton growers. The variables such as are land holding, annual income, mass media exposure, extension contact, economic motivation and innovative proneness had contributed significantly. The reason behind that, more the land holding provides more income. Annual income directly contributes to the economic performance of a farmer which is an ideal indicator of the same. Mass media exposure helps the farmers to gain more knowledge about the crop and thus contributes to the economic performance. In the same way extension contact and economic motivation of the farmer increases his economic performance also increases due to efficient utilization of available resources. Finally, the innovative proneness also contribute to the economic performance due to the fact that efficient utilization of resources without delay.

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