

## **Farmers' Technological Knowledge of Bt Cotton in Rajsamand, Rajasthan**

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In India the total area under Bt cotton cultivation is 7.0 Lakh hectares in the year 2008, which is 80 per cent of the total cotton growing area. In Rajasthan Bt cotton is grown in an area of 4.5-5.0 lakh hectares which is 68 per cent of the total cotton growing area. The major cotton growing districts are Bhilwara, Chittorgarh, Rajsamand, Banswara, Shri-Ganganagar, Bikaner and Nagaur. The soil and climatic condition of Rajsamand district is most suitable for Bt cotton cultivation but the average productivity is much lower than the standard recommended by scientists. Data also reveal that majority of the farmers are cultivating Bt cotton in cotton growing villages in Rajsamand district. Keeping the above facts in the view, the present study was undertaken with the following specific objectives:

1. To assess the knowledge level of farmers about improved Bt cotton cultivation technology.
2. To compare knowledge among different categories of farmers about improved Bt cotton cultivation technology.

The present study was conducted in the purposely selected Rajsamand district of Rajasthan. There are total seven tehsils in Rajsamand district of Rajasthan, out of which, one tehsil namely Railmagra has been selected on the basis of maximum area under cultivation of Bt cotton. Further, a comprehensive list of all the major Bt cotton growing villages was prepared in consultation with the personnel of revenue and Agriculture Department from the identified tehsil. Eight villages from selected tehsil were taken on the basis of maximum area under Bt cotton cultivation. Thus, total eight villages were selected for the present investigation. For selection of respondents, patwari and agriculture supervisor of respective villages. The list so prepared, 5 marginal, 5 small and 5 large growers were selected randomly from each identified village. Thus, in all 120 farmers (40 marginal, 40 small and large farmers) were included in the sample of the study. There after data were collected from the selected respondents and these data were analysed,

tabulated and interpreted the results in the light of the objects of the study.

### **Results and Discussion:**

To get an overview of the knowledge level, the respondents were categorized into (i) low (< 36), (ii) medium (37 to 46) and high (> 46) knowledge level on the basis of calculated mean and standard deviation of the obtained scores by the respondents. The distribution of respondents in each category is given in Table 1 on the next page.

Table 1 : Distribution of respondents on the basis of their level of knowledge about improved Bt cotton cultivation practices

S. No.	Knowledge Level	Marginal farmers		Small farmers		Large Farmers		Total	
		f	%	f	%	f	%	f	%
1.	Low(<36)	11	27.50	8	20.00	5	13.75	24	20.00
2.	Medium(37to 46)	18	45.00	22	55.00	15	37.50	55	45.83
3.	High (>46)	11	27.50	10	25.00	20	50.00	41	34.17
	<b>Total</b>	<b>40</b>	<b>100.00</b>	<b>40</b>	<b>100.00</b>	<b>40</b>	<b>100.00</b>	<b>120</b>	<b>100.00</b>

f = Frequency, % = per cent

Table 2 : Extent of knowledge of farmers about improved Bt cotton cultivation practices

S. No.	Improved practices	Marginal farmers		Small farmers		Large farmers		Total	
		MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
1.	Improved Bt cotton varieties	60.00	4	60.71	6	73.21	7	64.65	5
2.	Soil treatment	42.22	10	43.22	10	55.55	9	46.99	10
3.	Seed treatment	58.99	6	65.65	4	75.00	5	66.16	4
4.	Time and method of sowing	89.75	1	91.73	1	95.00	1	92.83	1
5.	Seed rate and spacing	73.89	3	80.69	2	84.35	3	66.45	3
6.	Application of fertilizers	59.08	5	61.39	5	64.27	8	61.56	8
7.	Irrigation management	76.20	2	75.50	3	90.00	2	80.67	2
8.	Weed management	57.29	7	60.00	7	73.33	6	63.52	6
9.	Plant protection measures	48.12	9	49.00	9	55.00	10	50.70	9
10.	Harvesting and storage	55.03	8	59.25	8	75.60	4	63.24	7

MPS = Mean per cent score

Table 3 : Comparison of knowledge among marginal, small and large farmers about improved Bt cotton cultivation practices

Source of variation	d.f.	SS	MSS	F Value
Between the categories of farmers	2	1287.724	643.863	5.69*
Error	117	13232.275	113.096	
<b>Total</b>	<b>119</b>	<b>14520.00</b>		

\* Significant at 5 per cent level.

Mean value Table

S.N	Categories of farmers	Mean value	CD	CV
1.	Marginal farmers	43.70		
2.	Small farmers	55.35	1.88	26.50
3.	Large farmers	67.10		

Table 1 reveals that out of 120 respondents, majority of respondents (45.83%) fell in medium level of knowledge group whereas, 20.00 per cent Bt cotton growers were observed in low level of knowledge group and remaining 34.17 per cent respondents possessed high level of knowledge about improved Bt cotton cultivation technology.

Further analysis of table clearly indicates that 27.50 per cent marginal farmers, 25.00 per cent small farmers and 50.00 per cent large farmers had high level of knowledge about improved Bt cotton cultivation technology. Whereas, 45.00, 55.00 and 37.50 per cent marginal farmers, small farmers and large farmers possessed medium level of knowledge about improved Bt cotton cultivation technology respectively. On the other hand, 27.50 per cent marginal farmers, 20.00 per cent small farmers and 13.75 per cent large farmers were kept in the low knowledge group as these category of respondents had poor knowledge about improved Bt cotton cultivation technology.

On the basis of above data, it was inferred that majority of the large farmers possessed high level of knowledge, while maximum number of marginal farmers (45%) had medium knowledge about improved practices of Bt cotton cultivation. It was further concluded that the existing knowledge of large farmers is comparatively higher than the marginal and small farmers in the study area.

The present findings are tune with the results of Nimje *et al.* (1990) who revealed that majority of the farmers had medium knowledge of dryland cotton technology. Whereas, 21 and 19.00 per cent of the respondents possessed high and low level of knowledge respectively. More *et al.* (2000) who also reported that majority of the respondents possessed medium level of knowledge, followed by high (27.86%) and low level (10.00%) of knowledge about improved cotton production practices respectively.

The individual aspect-wise extent of knowledge of Bt cotton growers was worked out. For this mean per cent score were calculated. The results of the same have been given in Table 2.

The data presented in Table 2 show that the large farmers possessed 73.21 per cent of knowledge about improved Bt cotton varieties, whereas knowledge of small and marginal

farmers about this practice was comparatively less with 61.71 and 60.00 per cent respectively. It was observed that majority of the farmers had knowledge about the name of varieties of Bt cotton namely MRC-6025, MRC-6029, RCH-134 and RCH-308 and they were also fully acquainted with duration and average yield of these recommended varieties of Bt cotton in the study area.

The extent of knowledge about soil treatment, it was noted that marginal, small and large farmers had knowledge 42.22, 43.23 and 55.55 per cent respectively. Majority of respondents were not properly acquainted with the chemicals used for soil treatment for killing termites in their fields. In case of seed treatment aspect the extent of knowledge was 58.99, 65.65 and 75.00 per cent among marginal, small and large farmers respectively. It was ranked sixth by the marginal farmers, fourth by the small farmers and fifth by the large farmers.

Further analysis of Table 2 shows that marginal, small and large farmers possessed extent of knowledge about recommended seed rate and spacing was 73.89, 80.69 and 84.35 MPS respectively. The knowledge about time of sowing, it was found that 95.00, 91.73 and 89.75 per cent knowledge was recorded in large, small and marginal farmers respectively. Majority of the respondents from all categories of farmers had full knowledge about first fortnight of May to 25<sup>th</sup> of May is the most appropriate time of sowing for Bt cotton.

Regarding knowledge about application of fertilizers, it was found that marginal, small and large farmers had 59.08, 61.39 and 64.87 per cent respectively. In case of irrigation management, marginal, small and large farmers possessed 76.20, 75.50 and 90.00 per cent knowledge respectively. Most of the farmers of all three categories knew about critical stages of irrigation in Bt cotton crop.

The knowledge about weed management practices was placed at seventh rank by marginal and small farmers, whereas sixth by large farmers with 57.29, 60.00 and 73.33 MPS respectively. The knowledge about quantity of chemicals used in weed management was observed poor in the study area. The extent of knowledge about plant protection measures, it was found that marginal, small and large farmers had knowledge 48.12, 49.00 and 55.00 per cent respectively. Table clearly shows that all the

categories of farmers had least knowledge about plant protection measures and this aspect ranked last by the marginal, small and large farmers. Whereas, the knowledge regarding harvesting methods, it was found that marginal, small and large farmers possessed 55.03, 59.25, 75.60 per cent respectively in the study area.

Thus, from the above discussion, it could be concluded that the extent of knowledge in marginal farmers was 42.00 to 89.75 per cent, in small farmers it was from 43.22 to 91.73 per cent, whereas in case of large farmers the extent of knowledge was observed to be from 55.00 to 95.00 per cent in all the improved practices of Bt cotton cultivation technology. Further, it was concluded that large farmers had more knowledge than small and marginal farmers about all the Bt cotton cultivation practices in the study area.

The present findings are in accordance with findings of Deshmukh (1995) who found that majority of the farmers had better knowledge of the simple practices of cotton cultivation like method and time of sowing, spacing, use of fertilizer doses and plant protection measures. However, the knowledge about important practices like rhizobium culture and gypsum application was known by meagre respondents. Kantharaj (1980) and Agadhi, et al. (1972) who revealed that respondents had required knowledge on recommended varieties, seed rate, spacing, time of sowing, doses of fertilizers to be applied, reasons for the use of nitrogenous fertilizers in cotton, common pests of cotton, control measures of boll worms and spodoptera, name of synthetic pyrethroides, diseases of cotton, types of sprayers to be used and optimum number of irrigation for cultivation of cotton.

To find out the significance of difference among the marginal, small and large farmers with respect to knowledge about improved Bt cotton cultivation technology, analysis of variance test (F test) was applied. The results are presented in table 3.

Hypotheses :

$NH_{01}$  : There is no significant difference among marginal, small and large farmers with respect to knowledge about improved Bt cotton cultivation technology.

$RH_1$  : There is a significant difference among marginal, small and large

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farmers with respect to knowledge about improved Bt cotton cultivation technology.

Table 3 shows that calculated 'F' value 5.69 is higher than tabulated value at 5 per cent level of significance. Thus, the hypothesis ( $NH_{01}$ ) is rejected and alternative hypothesis entitled "there is a significant difference among marginal, small and large farmers with respect to knowledge about improved Bt cotton cultivation technology" was accepted. It infers that there was a significant difference in knowledge among marginal, small and large farmers about Bt cotton cultivation technology.

Table further shows that by comparing the mean value with critical difference (C.D.) value, it was found that there was a significant difference between large and small farmers, small and marginal farmers, large and marginal farmers about knowledge of improved Bt cotton production practices. The mean value further indicates that large farmers had higher knowledge mean than small and marginal farmers about Bt cotton cultivation technology. This reveals that large farmers possessed more knowledge than small and marginal farmers about Bt cotton cultivation technology. This may be due to the fact that large farmer had more economic status, more mass media exposure, more size of land holding, more extension contact as compared to small and marginal farmers.

These findings are in line with the findings of the Pathak and Sesmal (1992), who found that there was significant difference in the level of knowledge among the marginal, small and large farmers in relation to improved practices of jute cultivation.

Conclusion:

From the above results it can be concluded that 45.83 per cent of the total respondents possessed medium level of knowledge while, 20.00 and 34.17 per cent Bt cotton growers had low and high level of knowledge about improved Bt cotton cultivation technology. It was further observed that the extent of knowledge in marginal farmers was 42.22 to 89.75 per cent, whereas in case of small farmers and large farmers it was 43.22 to 91.73 and 55.00 to 95.00 per cent in all the improved practices of Bt cotton cultivation respectively. Further, it was found that large farmers had more knowledge than small and marginal farmers about most of the Bt cotton

cultivation practices. The study revealed that there was significant difference among marginal, small and large farmers with respect to knowledge about improved Bt cotton cultivation technology.

References:

- Agadhi, J.G., Jahagirdar, K.A. and Shinde, P.S. 1972. Awareness of farmers about improved cultivation practices of groundnut. *Maharashtra Journal of extension education* 11:356-351.
- Deshmukh, V., Shinde, P.S. and Bhople, R.S. 2003. Impact of training imparted by KVK on cotton growers. *Maharashtra Journal of extension education* 22: 106-109.
- Kanthraj. S. 1980. A study on knowledge, extent of adoption and appropriateness of sunflower technology among sunflower growers. M.Sc. (Ag.) Thesis submitted to University of Agriculture Sciences, Bangalore.
- More, M.R., Patil, R.K. and Tekale, D.D. 1998. Constraints in adoption of cotton production practices. *Maharashtra Journal of extension education* 17: 362- 365.
- Nimje, N.R., Shinha, R.R. and Choudhary, D.P. 1990. Knowledge of farmers about dry land technology of cotton. *Maharashtra Journal of extension education* 9: 165-169.
- Pathak, S. and Sesimal, A.K. 1992. Adoption of Jute technologies. *Indian Journal of extension education*, 27: 77-80