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An analysis of purchasing behaviour and the problems faced by *Bt* cotton farmers

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ABSTRACT : Cotton is used as food crop for cattle's and fibre crop for many industries. Cotton plays a major role contributing agrarian economy of India. Present study was conducted in Nanded district of Maharashtra, which is one of the largest cotton producing state in India. Using a structured questionnaire as instrument of measurement, primary data was collected and analysed ordinarily through Garett ranking using the mean score of each variable. It was observed that timely availability of seed, lack of scientific knowledge, technical guidance about crop production and selection of varieties were the main problems reported by the majority of farmers while purchasing of cotton seed. Mallika and MRC 7351 were most preferred cotton seed brands by farmers as these are pest resistant and high yielding varieties suitable to cultivate in the study area and are recommended by retailers and fellow farmers in the study area.

Key words : *Bt* cotton, farmers, problems, purchasing behaviour, seed brands

The world seed market is nearly 53.76 billion USD in 2014-2015, out of which Indian seed market is about Rs.15700 crores in 2015. Global seed market will be 92.04 billion USD by 2020 at a CAGR of 9.4 per cent and India is expected to become third largest seed market in the world because of the growing food demand (Shukla, 2017). The private sector has started to play a significant role in the seed industry over the last few years mainly in the case of rice, maize, sunflower and cotton seeds. According to status report by Directorate of Cotton Development, India is at top with 1st rank by contribution of 33.23 per cent in total area of the world. China is at 2nd position by contributing 16.02 per cent of the world cotton acreage (Anonymous, 2017). Maharashtra is the second largest cotton producing state after Gujarat with approximately 79.00 lakh bales/year production having an average yield of 309 kg/ha (Anymous, 2016). Increase in cotton growing area and production started after the commercial release of bt cotton in 2002. Present availability of more than 1340 *Bt* cotton hybrids cultivation in India (Bharud, 2014), and thisparadigm shift from non bt cotton to genetically modified cotton hybrids (Muddassir *et al.*, 2017) showed significant positive impact on average yields and on the economic performance of cotton growers (Godara, 2017).

Indian agriculture must continuously evolve to remain ever responsive to manage the change and to meet the growing and diversified needs of different stakeholders in the entire production to consumption chain. Timely and adequate supply of quality seed to farmers can't

be neglected because non-availability of required quality and quantity of seed during sowing season coupled with the vagaries of monsoon could make agricultural production more vulnerable, resource poor farmers being worst hit economically. India is one of the few countries where the seed sector is already reasonably advanced. A number of research studies have been conducted on the different aspects of seed marketing in India. Majority of the studies are inclined towards production and distribution issues and a little attempt has been made on the buying behaviour aspects of the farmers. To fill up this gap, present study on purchasing behaviour of farmers regarding bt cotton seeds in Maharashtrahas been undertaken and an attempt was made to achieve the objectives pertaining to analyse the purchasing behaviour of farmers with reference to different brands of bt cotton seeds and problems faced bt cotton farmer growers in Nanded district of Maharashtra.

In order to proceed with investigation as per the objectives stated, multi stage purposive sampling design was adopted. The study was conducted during the year 2013-2014 in Nanded district of Maharashtra. In the first stage Nanded district in Maharashtra state was purposively selected as it is one of the highest producer of cotton crop. In the second stage four tehsils *i.e.* Bhokar, Himayatnagar, Kinwat and Mahur out of total 16 tehsils and two villages from each tehsil i.e. total eight villages were selected based on the highest area under cotton crop. In the third stage, 15 sample respondents who were growing cotton crop from each village were randomly selected. A total of 120 sample farmers were selected to elicit information required for the study. The primary data was collected using pre-designed questionnaire.

Primary data collected was analysed using SPSS trial version. Purchasing behaviour of farmer for various bt cotton seed brands was calculated using frequencies and percentages along with the total quantity of purchase. Garrett ranking technique was used to determine the problemsfaced by farmers. In this method, the farmers were asked to rank the given factors according to the magnitude of its severity. The orders of merit given by the respondents were converted into ranks by using the following formula.

Per cent position = $100 (R_{ij} – 0.5)/N_j$

Where,

Rij**:** rank given for the i^{th} factor (i= 1, 2……7) by the j^{th} individual (j = 1, 2 …..36)

Nj**:** number of factors ranked by j^{th} individual

The per cent position of each rank thus obtained was converted into scores by referring to the Table given by Henry Garrett. Then for each factor the scores of individual responses were added together and divided by the total number of respondents for whom the scores were added. Then mean scores for all the factors were arranged in the order of their ranks and inferences were drawn. A 3 point ranking scales was used to depict the severity of problem as high, medium, and low with scores 1, 2 and 3 respectively. Greater care was taken to collect comprehensive data from all possible sources.

Purchasing behaviour of different brands of cotton seed by the farmer : MRC 7351, Dr.Brent, Mallika, Bunny, Ajeet 155, Ajeet 199, Jadoo, Jackpot, Brahma, Paras and Akka were

the most popular brands of cotton seed in Maharashtra. From Table 1, it can be observed that out of these brands, Mallika brand was most preferred one as out of 150 sample farmers 22 preferred this brand with total quantity of 70.4 kg (16.97 %). This was followed by the MRC 7351 brand of Mahyco seeds which was purchased by 17 famers (14.17 %) and accounts to 59.50 kg (14.34%). Ajeet155 brand sold 51.20 kg (12.34%) and was purchased by 16 farmers (13.33%). Jadoo brand of Kaveri seeds were 45.5 kgs (10.97 %) bought by 10.83 % farmers. The brands such as Bunny and Brahma were purchased by 11 (9.17 %) and 10 (8.33 %) farmers which contributed to 9.01 and 8.80 per cent of quantity, respectively. Dr.Brent brand of Mahyco seeds and Akka Brand of Ankur seeds were purchased by equal number of farmers 9 each (7.50 %). Ajeet 199 brand, Jackpot brand and Paras brand were purchased by only few farmers' accounts to 5.00, 3.33 and 2.50 per cent, respectively.

Problems faced by the farmers while purchasing of the cotton seed : The sample farmers were asked to give the ranks to the problems faced by them during cotton seed purchase. Problems were ranked high, medium, and low according to the intensity. From Table 2 it can be observed that timely availability of seed and lack of scientific knowledge and technical guidance about crop production and selection of varieties before starting of sowing season were the major problems faced by the farmers while purchasing the hybrid seed. Mean score obtained for these problems are 78.50 and 72.73 respectively. Similar studies also reported same problems faced by farmers (Shankar *et al.*, 2016), (Sirisha and Babu, 2017). Pest and disease attack and price fluctuations of seed were the problems ranked 3rd and 4th position with mean score of 69.53 and 66.33, respectively. Effect of weather change on yield and availability of quality seed were considered as medium intensity problems as reported by farmers with mean scores of 61.91 and 59.7, respectively. Least intensive problems reported by the farmers were recommended yield, seed viability and germination losses with mean scores of 57.7,

Table 1. Purchasing behaviour of farmers for different cotton seed brands

S. No.	Name of the company	Brands	Quantity purchased (kg)	No. of farmers
1	Mahyco seeds	MRC 7351	59.50(14.34)	17(14.17)
		Dr.Brent	36(8.68)	9(7.50)
2	Nuziveedu seeds	Mallika	70.40(16.97)	22(18.33)
		Bunny	37.40(9.01)	11(9.17)
3	Ajeet seeds	Ajeet 155	51.20(12.34)	16(13.33)
		Ajeet 199	21.6(5.21)	6(5.00)
4	Kaveri seeds	Jadoo	45.50(10.97)	13(10.83)
		Jackpot	16(3.86)	4(3.33)
5	Monsanto seeds	Brahma	36.5(8.80)	10(8.33)
		Paras	12(2.89)	3(2.50)
6	Ankur seeds	Akka	28.80(6.94)	9(7.50)
Total	**414.9(100)**		**120(100)**	

(Figures in the parenthesis are percentage to the total)

Table 2. Problems faced by the farmers in purchasing of the cotton seed

Sl. No.	Nature of problem	Total scores	Mean score	Garrett rank
1	Timely availability	9420	78.50	I
2	Recommended yield	6924	57.7	VII
3	Seed viability	6240	52.00	VIII
4	Germination losses	6604	55.03	IX
5	Pest and disease attack	8343	69.53	III
6	Effect of weather change on yield	7429	61.91	V
7	Lack of scientific knowledge and technical guidance about crop production and selection of varieties	8728	72.73	II
8	Price fluctuations of seed	7960	66.33	IV
9	Availability of quality seed	7164	59.7	VI

52.00 and 55.03, respectively.

CONCLUSION

From this study it was observed that, timely non-availability of seed and lack of scientific knowledge and technical guidance about crop production and selection of varieties before starting of sowing season were the major problems faced by the farmers while purchasing the cotton seed. Hence there should be appropriate distribution system; storage system of seed before sowing season starts to meet timely availability of seed to the farmers. Scientific guidance and crop specific farmer's training programme should be conducted to create awareness among the farmer's about the crop production. Least important problems reported by the farmers were recommended yield, seed viability and germination losses from the selectedbrands.Also it was concluded that Mallika brand of Nuziveedu seeds purchased by more i.e. 22 number of sampled farmers, followed by the MRC 7351 brand,Ajeet 155 brand, Jadoo brand, Bunny and Brahma brands respectively in descending order. Dr. Brent brand and Akka Brand were purchased by equal number of farmers. Ajeet 199 brand, Jackpot brand and Paras brands were less purchased brands by the farmers.

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