Knowledge Level of Respondents about Bt Cotton Production Practices in Shahapur Taluk of Yadgir District (Karnataka).

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Abstract:- A sample survey study was on Adoption behavior of Bt cotton (Bacillus thuringiensis) growers in Shahapur taluk of Yadgir district (Karnataka) covering 1 taluk of 10 respondents purposively selected villages with 120 randomly selected sample growers in order to evaluate Adoption behavior of Bt cotton growers and the related correlates sufficient previous researchers were reviewed to select the critical variables for developing the theoretical concept and deriving the hypothesis. The data were collected to observation, informal discussion and formal interview techniques with the help of predesigned tested instrument for recording the relevant information. The data thus, collected were processed, analyzed, interpreted in the light of objectives set forth with the application of suitable statistical test. It has found that majority (63.33%) of the respondents had medium level of knowledge, whereas 19.16 and 17.50 per cent of respondents had high and low knowledge respectively. The mean knowledge score of the respondents was 30.84.

I. INTRODUCTION

India is the largest cotton growing country in the world and the cotton crop occupies nearly 9 % of the annual cropped area of the country and plays a significant role in the Indian economy.

Cotton (*Gossypium species*) is also known as 'White Gold' and 'King of Fiber's dominates India's cash crop, and makes up 65% of the raw material requirements of the Indian textile industry. In the 13th century, the Mongol-Tartar dynasty brought cotton to china from India. Today, china is the largest producer in the world and India is the second largest producer country in the world. India has the largest acreage (9.4 m/ha) under cotton at global level and has the productivity of 560 kg Lint /ha and ranks second in production after China. Cotton is a crop of prosperity and is considered to be an industrial commodity of worldwide importance. It is an important fiber crop of global significance, cultivated in tropical and sub-tropical regions of around eighty countries, which accounts for 45 percent of world fiber. The major producers of cotton are China, USA, India, Pakistan, Uzbekistan, Argentina, Australia, Greece, Brazil, Mexico and Turkey. These countries contribute about 85 %to the global cotton production.

In India Cotton occupies a predominant place among cash crops touching the country's economy at several points by generating direct and indirect employment in the agricultural and industrial sectors. Cotton occupies a place of pride being the prime supplier of raw material (85 %) for textile industry, which is one of the leading industries in the country. Cotton industries provide means of livelihood for about 250 million people through its cultivation, trade and industries in India. Commercially cotton is one of the best export earning commodities in the country. Textiles and related exports of which cotton constitutes nearly 65 per cent, accounts for nearly 33 %of the total foreign exchange earnings of our country. Cotton is cultivated in three distinct agro-ecological regions (north, central and south) of the country. The northern zone is almost irrigated, while the percentage of irrigated area is much lower in the central and southern zones.

In cotton, bollworms cause significant yield losses. Three types of bollworms, *viz*. American bollworm (*Helicoverpa armigera*), pink bollworm (*Pectinophora gossypiella*) and spotted bollworms (*Earias vitella*) attack the crop. Sources of resistance to the bollworms in the germplasm of cotton, the world over are not available. Moreover, about 10 %of insecticides on global basis and 45 %in India are used for control of insects in cotton crop alone. Insecticides have adverse effects on natural predators and parasites of bollworms, beneficial insects, human health and microorganisms such as earthworm, blue green algae and nitrogen fixing bacteria. Use of insecticides also leads to environmental pollution (soil and water), increase in cost of cultivation and sometimes development of resistance in insects against insecticides. Hence, there is need to develop bollworm resistant cotton to control yield losses due to bollworms.

In Karnataka, cotton occupies an area of 4.64 lakh hectare with a production of 21.00 lakh bales and with a productivity of 769 kg/ha (2016-17). The Predominant Bt cotton growing areas are Yadgir, Kalaburgi, Bidar, Raichur, Bellary, Koppal, Bagalkot, Davanagere and Mysore. The average yield in Yadgir district, Shahapur taluk is (45 Quintal/ha).

II. METHODOLOGY

The research study on Knowledge level of respondents about Bt cotton production practices was conducted during

the year 2017-2018 in Shahapur taluk of Yadgir district (Karnataka). In the present investigation, descriptive type of ex-post-facto research design was employed. This design was appropriate because the phenomenon had already occurred. Ex-post-facto research is the most systematic empirical enquiry in which the researcher does not have any control over independent variables as their manifestation has already occurred or as they are inherent and not manipulatable thus, inferences about relations among variables were made without direct intervention from concomitant variation of independent and dependent variables. (Kerlinger,1973). Yadgir district comprises of three Taluks namely, shahapur, yadgir and shorapur. The shahapur taluk is purposively selected, because highest area under Bt cotton crop. In shahapur ten villages were selected namely, Doranahalli, Gogi, Sagar, Vanadurga, Rabanalli, Hothpet, Hulkal, Mudabol, Madriki, Gawar from each village 12 samples were drawn randomly such that the total sample size was 120.

Knowledge was operationally defined, as the extent to which Bt cotton production techniques was knew by the respondents. For the present study an operational measure for knowledge was developed by constructing a "teacher made knowledge test". The knowledge test was constructed based on the package of practices developed for Bt cotton cultivation. Lists of 19 cultivation practices were developed for the purpose and each practice was administered in the form of questions to respondents to obtain the response from Bt cotton growers. The questions were provided with multiple choice answers. The questions and answers pertaining to knowledge test were carefully designed in consultation with experts. The questions covered full range of cultivation practices beginning from variety selected till the crop yield. Frequency percentage calculated each statement.

The above procedure was followed by Kanavi (2000) and Budihal (2001).

III. RESULTS AND DISCUSSION

➢ *To determine the knowledge level of respondents about Bt cotton production practices.*

Table: 1. Knowledge level of farmers regarding Bt cotton cultivation Practices.

The data presented in Table: 1 indicated that, knowledge level of individual Bt cotton cultivation practices. Majority of the farmers had knowledge of hybrid best suited for their region like Ajit (79.17%) and Jadoo (63.66%).

Majority of the farmers (70%) expressed deep black cotton soil as a best suited soil for Bt cotton cultivation. 60 per cent of respondents had knowledge of duration of the crop. 61.67 and 80 per cent of the respondents had correct knowledge of sowing time and sowing method of the crop. However, little more than half 55 per cent had knowledge about recommended seed rate.

The correct knowledge of recommended spacing was known to 60.83 per cent of the respondents. 56.67 per cent correct knowledge about irrigation. With regard to quantity of FYM required 52.50 per cent of respondents had correct knowledge and 50 per cent of the respondents had correct knowledge of proper time for its application. With respect to fertilizer requirement nearly 52.50 per cent were aware of required quantity of chemical fertilizer (NPK) and 48.33 per cent of them were aware of the chemical used for control of flower dropping.

Majority (63.66%) of the respondents were aware of aphids as a major pest with its control measures, 60 per cent of respondents had knowledge about attack of mirid bug with its control measures and 56.67 per cent of the respondents were aware of attack of Bollworms and its control measure.

Large majority (58.33%) of the respondents had correct knowledge about the occurrence of leaf reddening disease and its control measure followed by 67.17 per cent of respondents had knowledge about attack of angular leaf spot with control measure and 55.83 per cent of the respondents had knowledge of attack of grey mildew along with its control measure.

Among inter crops 53.33 per cent of respondents expressed chilli as the best suited intercrop in Bt cotton followed by Bhendi (48.33%) and Pigeon Pea (52.50%).

With respect to yield, majority (81.17%) of the respondents were having knowledge of yield level (25 - 30 quintals) that can be obtained from one hectare of land.

Sl. no.	Practice	Knowledge level					
		Fully Adopted		Partially Adopted		Not Adopted	
1	Hybrids	F	%	F	%	F	%
	Ajit	95	79.17	16	13.33	9	7.50
	Jadoo	76	63.66	13	10.83	31	25.83
2	Suitable soil type (Deep black cotton soil)	84	70.00	18	15.00	18	15.00
3	Duration of crop (165-170 days)	72	60.00	12	10.00	36	30.00
4	Sowing						
	Time (May to July 15)	74	61.67	11	9.17	35	29.16

	Method (Manual dibbling)	96	80.00	18	15.00	6	5.00
	Seed rate (2 - 2.5 kg/ha)	66	55.00	32	26.67	22	18.33
5	Spacing (90 x 90 cm)	73	60.83	24	20.00	23	19.16
6	Irrigation	68	56.67	30	25.00	22	18.33
7	FYM						
	Quantity of application (5 tons/ha)	63	52.50	36	30.00	21	17.50
	Time of application (2-3 weeks before sowing)	60	50.00	32	26.67	28	23.33
8	NPK (80:40:40) kg/ha	61	50.83	40	33.33	19	15.83
9	Flower drop control (Planofix 0.25ml/lit)	58	48.33	46	38.33	16	13.33
10	Intercultivation (2-3 times)	62	51.17	24	20.00	34	28.33
11	Major pests						
	Aphids	76	63.33	20	16.67	24	20.00
	Mirid Bug	72	60.00	26	21.67	22	18.33
	Bollworms	68	56.67	35	29.17	17	14.16
12	Major Disease						
	Leaf spot	74	61.17	28	23.33	18	15.00
	Leaf reddening	70	58.33	38	31.16	12	10.00
	Grey mildew	67	55.83	31	25.83	22	18.33
13	Inter crop						
	Chilli	64	53.33	25	20.83	31	25.83
	Bhendi	58	48.33	36	30.00	26	21.66
	Pigeon Pea	63	52.50	40	33.33	17	14.16
14	Yield (25-30 quintals/ha)	98	81.17	11	9.16	11	9.16

Overall Knowledge level of the respondents about Bt cotton production practices.

The data presented in (Table: 2) indicated that, 63.33 per cent of the respondents had medium level of knowledge, whereas 19.16 and 17.50 per cent of respondents had high and low knowledge respectively. The mean knowledge score of the respondents was 30.84.

(n=120)

Sl. no.	Category	Number	Percentage
1.	Low (Mean – SD) < 22.44	21	17.50
2.	Medium (Mean ± SD) 39.24– 22.44	76	63.33
3.	High (Mean + SD) >39.24	23	19.16
	Total	120	100
Mean=30.84 SD=8.40			

Table 2. Overall Knowledge level of the respondents.

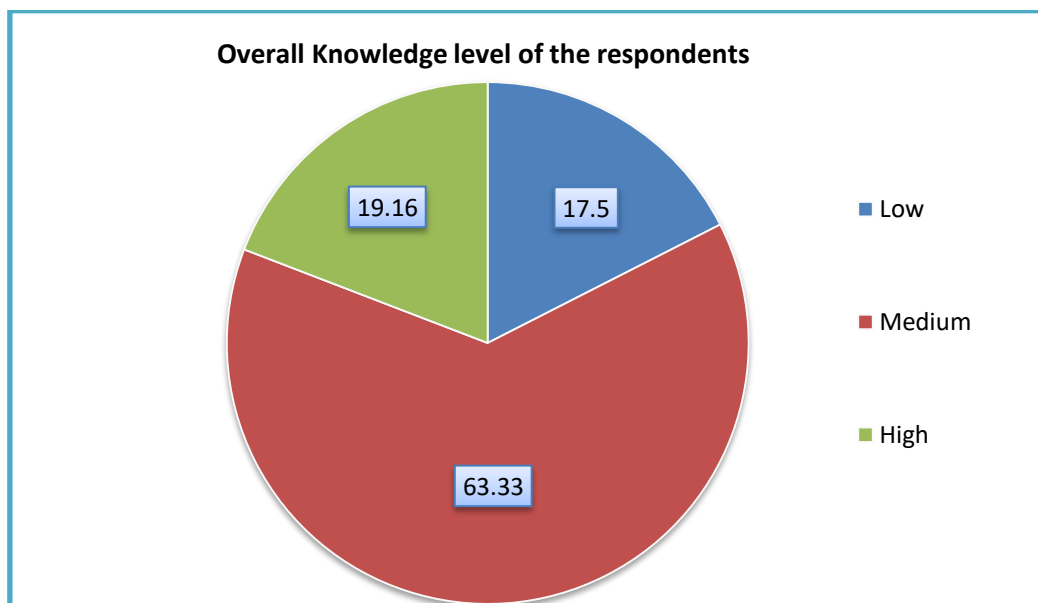**Overall Knowledge level of the respondents**

Fig 1:- Overall knowledge level of the respondents

IV. CONCLUSION

It is concluded that majority of the respondents were middle age group having education up to high level and having medium level of farming experience, mass media exposure, innovativeness, achievement motivation, risk orientation, decision making ability and information seeking ability. It was found that majority of them had medium level of knowledge and adoption regarding Bt cotton production practices. The major constraints reported by the respondents were difficulty in controlling pests and diseases, lack of marketing facilities, less knowledge about Bt cotton production practices, lack of knowledge about fund availability from the government. State Department of Agriculture and University of Agricultural Sciences should make integrated extension efforts (trainings, demonstrations, field days, literatures etc.), provide marketing facilities, promote Bt cotton growers and groups to provide the required technical knowledge about production practices of growers for maximum adoption Bt cotton production.

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