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A STUDY ON THE ADOPTION OF THE RECOMMENDED PACKAGE OF PRACTICES IN BT COTTON BY THE FARMERS OF RANGA REDDY DISTRICT OF ANDHRA PRADESH

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ABSTRACT

A study was taken up with the main objective of identifying and analyzing the adoption of package of practices by the Bt cotton farmers as recommended by the scientists of ANGRAU. It was conducted in 2013 with a sample of Fifty (50) farmers in the Ranga Reddy district of Andhra Pradesh. Cent per cent of the respondents fell in the category of fully adopted with respect to seed treatment. 96.00 per cent of the respondents fully adopted recommended time of sowing, pest management practices & time of harvest; while the remaining 4.00 per cent fell in the category of partially adopted. 90.00 per cent of the respondents fully adopted recommended methods of sowing, time of fertilizer application & weeding practices; while the remaining 10.00 per cent fell in the category of partially adopted. 88.00 per cent of the respondents fully adopted gap filling, while the remaining 12.00 per cent fell in the category of partially adopted. With respect to crop rotation 90.00 per cent of the respondents fell in the category of fully adopted, followed by partially adopted (6.00%), and not adopted (4.00%). A little more than half of the respondents were grouped in high (54.00%) adoption of package of practices in Bt cotton, followed by medium (38.00%) and low (8.00%) categories.

INTRODUCTION

Bt cotton was introduced in India in the year 2002 after following bio safety testing for more than six years. The area planted under Bt cotton has increased from a mere 29,000 hectare in 2002 to 11 million hectare in 2011. It is amazing to note a 380 fold increase in a decade. Bt cotton now covers as much as 93.00 per cent of the total cotton acreage in the country. In India increase in yield in Bt cotton was about 50.00 per cent due to effective control of boll worms. A significant reduction in insecticidal applications following the introduction of Bt cotton was also noticed and farmers earned profits ranging from Rs. 7,800 to Rs. 30,500 per hectare. Bt cotton has delivered significant benefits to all the members of the agricultural value chain in the country and has contributed to a cumulative national farm income. Following large scale adoption of Bt cotton by farmers both positive and negative consequences were noticed. One possible reason might be due to improper adoption of technologies as recommended by the experts. Scientists of Acharya N G Ranga Agricultural University (ANGRAU), Andhra Pradesh developed certain special recommendations for Bt cotton. Hence a study was under taken to find out the adoption of recommended technologies by farmers in Bt cotton.

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MATERIAL AND METHODS

The present study was taken up with the main objective of identifying and analyzing the adoption of package of practices by the Bt cotton farmers as recommended by the scientists of ANGRAU. For the purpose of study fifty (50) farmers growing Bt cotton were selected at random from Kethireddypalli village of Moinabad mandal of Ranga Reddy district of Andhra Pradesh. Data was collected during 2013 through structured interview schedule. The adoption schedule consisted of twenty nine (29) items related to package of practices in Bt cotton. The adoption of these items was measured on a three point continuum namely fully adopted, partially adopted and not adopted. For the purpose of study adoption was operationally defined as the practical application of an item in field conditions. Fully adopted was operationally defined as complete adoption of an item as recommended by the scientists of ANGRAU without any distortion. Partially adopted was operationally defined as the adoption of an item

to certain extent or partly and not completely. Not adopted was operationally defined as complete non-adoption of an item by the farmer in Bt cotton cultivation. A score of 3 was given to fully adopted, 2 score to partially adopted and 1 score to not adopted. The total score for each item was obtained by summing up the scores of all the respondents. Mean score of an item was obtained by dividing the sum of the scores of an item of all the respondents by the total number of respondents. Ranks were given to the items based on mean scores. One or more items were given same ranks if their mean scores are equal. The total score of each respondent was also calculated by summing up the scores obtained for all the 29 items. The respondents were categorized into three categories of adoption namely., low, medium and high using mean and standard deviation. Frequency and percentage were calculated.

RESULTS AND DISCUSSION

The results of the study are presented in Table 1 and Table 2. Item analysis of the adoption of recommended package of practices by the respondents in Bt cotton is presented in Table 1 and distribution of respondents based on adoption of package of practices is depicted in Table 2.

The item wise analysis of the adoption of recommended package of practices by the respondents in Bt cotton is discussed below.

Land preparation: Majority of the respondents fully adopted (84.00%) recommended land preparation practices, while the remaining 16.00 per cent fell in the category of partially adopted. Based on mean score land preparation was ranked VI.

Depth of ploughing: Majority of the respondents partially adopted (80.00%) recommended depth of ploughing, while the remaining 20.00 per cent fell in the category of fully adopted. Based on mean score depth of ploughing was ranked XII.

Time of sowing: Majority of the respondents fully adopted (96.00%) recommended time of sowing, while the remaining 4.00 per cent fell in the category of partially adopted. Based on mean score time of sowing was ranked II.

Recommended varieties: A little more than three fourth of the respondents fully adopted (78.00%) recommended varieties, while the remaining 22.00 per cent fell in the category of partially adopted. Based on mean score recommended varieties was ranked IX.

Table 1. Item analysis of the adoption of recommended package of practices by the respondents in bt cotton (n=50)

S.No	Item	Fully Adopted		Partially Adopted		Not Adopted		Total score	Mean score	Rank
		F	%	F	%	F	%			
1	Land preparation	42	84.00	8	16.00	--	--	142	2.84	VI
2	Depth of ploughing	10	20.00	40	80.00	--	--	110	2.20	XII
3	Time of sowing	48	96.00	2	4.00	--	--	148	2.96	II
4	Recommended varieties	39	78.00	11	22.00	--	--	139	2.78	IX
5	Seed rate	--	--	50	100.00	--	--	100	2.00	XIII
6	Seed treatment	50	100.00	--	--	--	--	150	3.00	I
7	Spacing	40	80.00	10	20.00	--	--	140	2.80	VIII
8	Method of sowing	45	90.00	5	10.00	--	--	145	2.90	III
9	Gap filling	44	88.00	6	12.00	--	--	144	2.88	IV
10	Plant population/acre	--	--	3	6.00	47	94.00	53	1.06	XXI
11	Scheduling of irrigation	--	--	5	10.00	45	90.00	55	1.10	XX
12	FYM application	2	4.00	45	90.00	3	6.00	99	1.98	XIV
13	Dosage of fertilizers	10	20.00	40	80.00	--	--	110	2.20	XII
14	Time of fertilizer application	45	90.00	5	10.00	--	--	145	2.90	III
15	Split application of nitrogen & potash	41	82.00	9	18.00	--	--	141	2.82	VII
16	Zinc sulthate application	2	4.00	9	18.00	39	78.00	63	1.26	XVIII
17	Correction of nutrient deficiency	2	4.00	4	8.00	44	88.00	58	1.16	XIX
18	Precautions at the time of fertilizer application	5	10.00	15	30.00	30	60.00	75	1.50	XVII
19	Running guntaka/plough in between rows	39	78.00	9	18.00	2	4.00	137	2.74	X
20	Weeding	45	90.00	5	10.00	--	--	145	2.90	III
21	Pest management	48	96.00	2	4.00	--	--	148	2.96	II
22	Disease management	2	4.00	18	36.00	30	60.00	72	1.44	XVIII
23	Handling of pesticides	10	20.00	20	40.00	20	40.00	90	1.80	XVI
24	Intercropping	--	--	2	4.00	48	96.00	52	1.04	XXII
25	Refugee crop	20	40.00	5	10.00	25	50.00	95	1.90	XV
26	Picking	42	84.00	8	16.00	--	--	142	2.84	VI
27	Crop rotation	45	90.00	3	6.00	2	4.00	143	2.86	V
28	Time of harvest	48	96.00	2	4.00	--	--	148	2.96	II
29	Storage	29	58.00	21	42.00	--	--	129	2.58	XI

Table 2. Distribution of respondents based on adoption of package of practices in Bt cotton (n=50)

S.No	Category	F	%
1	Low	4	8.00
2	Medium	19	38.00
3	High	27	54.00

Seed rate: Cent per cent of the respondents fell in the category of partially adopted with respect to recommended seed rate. Based on mean score seed rate was ranked XIII.

Seed treatment: Cent per cent of the respondents fell in the category of fully adopted with respect to seed treatment. Based on mean score seed treatment was ranked I.

Spacing: Majority of the respondents fully adopted (80.00%) recommended spacing, while the remaining 20.00 per cent fell in the category of partially adopted. Based on mean score spacing was ranked VIII.

Method of sowing: Majority of the respondents fully adopted (90.00%) recommended method of sowing, while the remaining 10.00 per cent fell in the category of partially adopted. Based on mean score method of sowing was ranked III.

Gap filling: Majority of the respondents fully adopted (88.00%) gap filling, while the remaining 12.00 per cent fell in the category of partially adopted. Based on mean score gap filling was ranked IV.

Plant population/acre: With respect to recommended plant population/acre, majority of the respondents fell in the category of not adopted (94.00%), while the remaining 6.00 per cent fell in the category of partially adopted. Based on mean score plant population/acre was ranked XXI. The probable reason could be that the farmers were in the notion that more plants per acre gives more returns.

Scheduling of irrigation: With respect to scheduling of irrigation, majority of the respondents fell in the category of not adopted (90.00%), while the remaining 10.00 per cent fell in the category of partially adopted. Based on mean score scheduling of irrigation was ranked XX. There might be two reasons for the above results. One probable reason could by the availability of good irrigation source hence gave more irrigation than recommended. Another reason could be the lack of irrigation sources hence did not give scheduled irrigations.

FYM application: Majority of the respondents partially adopted (90.00%) recommended FYM application, followed by not adopted (6.00%) and fully adopted (4.00%). Based on mean score FYM application was ranked XIV. The probable reason for partial adoption may be that the farmers were more dependent on inorganic sources of soil & plant nutrition than the organic sources.

Dosage of fertilizers: Majority of the respondents partially adopted (80.00%) recommended dosage of fertilizers, while the remaining 20.00 per cent fell in the category of fully adopted. Based on mean score dosage of fertilizers was ranked XII. The probable reason might be that for nitrogenous fertilizers, farmers generally deviate from the normal recommended dosages and apply in excess.

Time of fertilizer application: Majority of the respondents fully adopted (90.00%) recommended time of fertilizer application, while the remaining 10.00 per cent fell in the category of partially adopted. Based on mean score time of fertilizer application was ranked III.

Split application of nitrogen & potash: Majority of the respondents fully adopted (82.00%) recommended split application of nitrogen & potash, while the remaining 18.00 per cent fell in the category of partially adopted. Based on mean score split application of nitrogen & potash was ranked VII.

Zinc sulphate application: With respect to zinc sulphate application a little more than three fourth of the respondents fell in the category of not adopted (78.00%), followed by partially adopted (18.00%), and fully adopted (4.00%). Based on mean score zinc sulphate application was ranked XVIII.

Correction of nutrient deficiency: With respect to correction of nutrient deficiency majority of the respondents fell in the category of not adopted (88.00%), followed by partially adopted (8.00%), and fully adopted (4.00%). Based on mean score correction of nutrient deficiency was ranked XIX. Generally iron, magnesium and boron deficiency symptoms are observed in cotton. And for these deficiency symptoms farmer generally approached the pesticide shop owners/dealers who are ignorant of the causes of these deficiency symptoms, as a result the owners/dealers exploit the farmers by suggesting wrong and costly chemicals which actually gives more margin to the pesticide shop owners.

Precautions at the time of fertilizer application: With respect to precautions at the time fertilizer application 60.00 per cent of the respondents fell in the category of not adopted, followed by partially adopted (30.00%), and fully adopted (10.00%). Based on mean score precautions at the time of fertilizer application was ranked XVII.

Running guntaka/plough in between rows: With respect to Running guntaka/plough in between rows a little more than three fourth of the respondents fell in the category of fully adopted (78.00%), followed by partially adopted (18.00%), and not adopted (4.00%). Based on mean score running guntakal/plough in between rows was ranked X.

Weeding: Majority of the respondents fully adopted (90.00%) recommended weeding practices, while the remaining 10.00 per cent fell in the category of partially adopted. Based on mean score weeding was ranked III.

Pest management: Majority of the respondents fully adopted (96.00%) recommended pest management practices, while the remaining 4.00 per cent fell in the category of partially adopted. Based on mean score pest management was ranked II.

Disease management: With respect to disease management 60.00 per cent of the respondents fell in the category of not adopted, followed by partially adopted (36.00%), and fully adopted (4.00%). Based on mean score disease management was ranked XVIII.

Handling of pesticides: With respect to handling of pesticides an equal proportion of 40.00 per cent each fell in the categories of partially adopted and not adopted, while the remaining 20.00 per cent fell in fully adopted category. Based on mean score handling of pesticides was ranked XVI.

Intercropping: Majority of the respondents fell in the category of not adopted (96.00%) recommended intercropping practices, while the remaining 4.00 per cent fell in the category of partially adopted. Based on mean score intercropping was ranked XXII.

Refugee crop: With respect to Refugee crop, half of the respondents fell in the category of not adopted (50.00%), followed by fully adopted (40.00%), and partially adopted (10.00%). Based on mean score refugee crop was ranked XV.

Picking: Majority of the respondents fully adopted (84.00%) recommended Picking practices, while the remaining 16.00 per cent fell in the category of partially adopted. Based on mean score picking was ranked VI.

Crop rotation: With respect to crop rotation, majority of the respondents fell in the category of fully adopted (90.00%), followed by partially adopted (6.00%), and not adopted (4.00%). Based on mean score crop rotation was ranked V.

Time of harvest: Majority of the respondents fully adopted (96.00%) recommended time of harvest, while the remaining 4.00 per cent fell in the category of partially adopted. Based on mean score time of harvest was ranked II.

Storage: with respect to storage practices 58.00 per cent the respondents fully adopted, while the remaining 42.00 per cent fell in the category of partially adopted. Based on mean score storage was ranked XI.

On further analysis as depicted in Table 2, that a little more than half of the respondents were grouped in high (54.00%) adoption of package of practices in bt cotton, followed by medium (38.00%) and low (8.00%) categories. The findings are in conformity with that reported by Sharma and Chandargi (2005); Maraddi and Kumar (2008), and Ambedkar *et. al.* (2013).

The present study indicated that farmers had made an attempt to adopt the recommended package of practices in Bt cotton to certain extent. But how ever in some cases it was not completely adopted. So, it is now the time for the extension workers to intervene to educate and motivate the farmers of this area to adopt the technologies in Bt cotton as recommended by the scientists of ANGRAU so as to benefit the farmers.

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