A STUDY ON CONSTRAINTS IN ADOPTION OF RECOMMENDED PRACTICES OF COTTON IN AURANGABAD AND JALNA DISTRICT

Dr.K.R. Nadre[1]

Cotton is one of the most important cash crops, which is cultivated by most of the farmers in Marathwada region. Specially for dry land farmers, there is no other alternative to cotton crop, as their whole family economy is depend on it. If dry land farming needs to be economically viable, there is need to increase productivity of cotton per hectare.

Area under cotton is increasing day by day, as it is because of satisfactory remunerative prices given by cotton federation. As regards to the productivity, which is very less as compared to the average yield of Maharashtra State and national level. Even productivity at farmers field has gone down to the maximum extent as compared to yields at Research station and Demonstration plots.

It is revealed from previous studies that the adoption of recommended practices of rainfed cotton was not to the extent due to soico-economic. Biophysically technical problems faced by the farmers. It is the fact that large number of technologies in cotton are generated and recommended by the Marathwada Agricultural University, Parbhani, but very the farmers are adopting few. Hence this study was undertaken to know the reasons of low adoption and particularly socio-economic and biophysical and technological constraints of cotton growers in relation to the adoption of recommended practices of cotton.

Following objectives are outlined herewith:

1. To study the personal, social economical characteristics of the cotton growers.

[1] Training Organizer & (Facilitator), K.V.K. Aurangabad

2. To study the extent of adoption of practices in cotton.
3. To identify adoption gap in cotton cultivation practices.
4. To study the constraints in adoption of the recommended practices.

Methodology

Keeping in view the objectives, the study was conducted in Aurangabad and Jalna Districts of CMP Zone during 1998-99. Aurangabad, Paithan and Gangapur taluks from Aurangabad districts and Jalna taluk from Jalna district were selected. Further twelve villages from three Talukas were selected randomly. Eight farmers from each village having cotton crop situation like heavy to medium black cotton soil rainfed were selected. Taking into consideration the objectives of the study and on the basis of improved recommended practices interview schedule was constructed to collect required data from respondents. The construction of the schedule was done after reviewing earlier research and discussion with Agronomist, Entomologist and Pathologists of NARP, A'bad. The data was collected with the help of structural scheduled. The collected data were tabulated and analyzed with the help of frequencies and percentages to interpret the results.

Findings

Personal & Socio-Economic Characteristics of the Respondents

It is indicated from Table - 1 that majority of the cotton growers (48 percent) belonged to middle-aged group followed by young (30.38 percent) and old age (21.10 percent) respectively. As regards to the education it was observed that more that 1/2 of the respondents (57.5 percent) were educated above middle to college education followed by upto middle level education (30.8 percent). very less member of respondents (11.5 percent) was illiterate. It is revealed from table that majority of the respondents (65.4 percent) belonged to higher castes followed by OBC (21.14 percent) and NT, DNT (11.5 percent), respectively. very meager (1.98 percent) respondents were from SC category.

It is revealed that from table that 50 percent respondents had land upto to 4 ha followed by 4.1 to 10 ha category respondents 32.7 percent. Only 11.5 percent re-

spondents were found in the category of above 10 ha. Further, three fourth of the cotton growers (76.9 percent) engaged in Agriculture occupation only. Equal number of respondents (11.5 percent) involved in subsidiary and other than agriculture and subsidiary occupation category respectively. Moreover, as regards to their family size (59.6 percent) respondents had family members above 5 and remaining 40.4 percent respondents had family size upto 5 members.

Annual income of 53.8 percent respondents was in the range of 25,001 to 75,000 followed by the respondents (32.7 percent) having annual income above Rs.75,000/- very less number of respondents (13.5 percent) having income upto Rs.25,000/- only. While looking to the social participation status of respondents, it was observed that majority of them (53.8 percent) and low social participation followed by medium participation (26.9 percent), high participation (5.8 percent) respectively. Thirteen percent respondents did not participate in social organization.

Utilization of Sources of Information

The data presented in Table-2 revealed that sources of information that were categorized under formal personal sources, informal personal sources and impersonal sources accounted for a list of a sources. It was revealed that the farmers used one or more than one sources. It is indicated that the most predominant source of information in the information getting sources was Gram Vistarak who mentioned as a source of information by 80.7 percent. And another important source were the Radio & Television mentioned by 76.9 and 71.6 percent respondents respectively under the category of impersonal sources. Among the informal sources friend was ranked first for utilization by (38.4 percent) respondents followed by Relative (34.6 percent) and neighbour (32.7 percent) respectively.

Adoption of Recommended Practices of Cotton

List of the improved recommended practices of cotton were classified in five categories namely preparatory tillage, seed and spacing, fertilizer management practices, inter culturing and plant protection practices. The data presented in Table-3

reveal that criss cross ploughing was parctically adopted by 67.4 percent respondents followed by 28.8 percent respondents were in non-adoption category.

As regards to basal does it was partially adopted by (73.5 percent) respondents and applied after 35 to 60 days of sowing by 77.55 percent respondents out of fertilizer users. Basal dose applied at sowing time was adopted by very less respondents (10.2 percent) out of fertilizer users. Moreover eighty four percent respondents not adopted sowing method of fertilizer application at the time of seed sowing. Nitrogen in the form of urea as top dressing was used by 86.9 percent respondents but recommended time of application of top dressing at 35 to 40 days after sowing was not adopted by 56.52 fertilizer user respondents. majority of the respondents (89.1 percent) used ring method of fertilizer application for top dressing.

Intercultural Practices

It was found that majority of the respondents above fifty percent-adopted recommended practices of thinning, hoeing and weeding.

As regards to practices of opening of ridges and furrows after set of monsoon was not practiced by 84.6 percent respondents. No body used weedicide for control of weeds out of total respondents.

Plant Protection Practices

The data revealed that Thematic as systemic insecticide was not used by majority of the respondents (59.6 percent). Only $1/4^{th}$ of the respondents adopted recommended dose of thematic application. However, as regards to the adoption of plant protection schedule, majority of the respondents (82.7 percent) adopted plant protection schedule impartial. Only less number of respondents (13.5 percent) adopted complete plant protection schedule. Despite of introduction of IPM, the low cost technologies like Trap crop, Foreman trap, light trap, HNPV, Tricograma and Crospa eggs etc, were not adopted by farmers.

Constraints in Adoption

Identification of Adoption Gap

In the study adoption gap was defined as the recommended practices which were not adopted by fifty or more than fifty percent respondents, out of total respondents. Out of total practices recommended in five categories, 14 practices were identified as adoption gap. List of the adoption gap is given in **Table-4.**

Reasons for Adoption Gap (Constraints) and Extension Strategy

After identification of adoption gaps the reasons for then were sought from respondents by open and questions. List of the reasons of adoption gap is enclosed in Table-5. Total 25 reasons expressed for adoption gaps by the respondents were grouped under 7 broad titles of the reasons and given in Table-6.

An attempt was also made to identify reasons of non-adoption of recommended practices of cotton-by-cotton growers. Majority of the respondents expressed their concentrates in adoption practices like spacing, basal dose of fertilizer, FYM, use of weedicides, opening of ridges and furors, use of IPM. Seventy three percent respondents expressed reason for non-adoption of full dose of fertilizer due to high rate. However in adoption of spacing 65.3 percent respondents shown reasons of non-availability of intercultural implement and difficult in performing hawing operation. It also indicates from Table that 71.2 percent respondents opined that requirement of costly hybrid seed will be more if adoptioned 3'x2' or 2'x2' spacing. It was also told by the 7.3 percent respondents that intercrop in cotton cannot be taken. Majority of the respondents expressed that money is the main constraints in adoption of recommended fertilizer dose in cotton followed by taking risk in adoption due to heavy break through of insect pest and irregular rains etc. Use of IPM and weedicides was not done because of 100 percent respondents told that they are not aware about these practices. Wrong assumption of excess use of urea gives more growth and high yield expressed by 40.3 percent respondents.

Extension Strategy

On the basis of reason for adoption gap extension strategy in general is suggested taking into account personal socio-economic characteristics of the respondents, which is given in Table-6. On the basis of extension strategy following are the specific recommendations suggested to increase cotton production per hectare.

1. To bring awareness amongst the farmers about recommended practices of cotton more emphasis is to be given on fertilizer management, spacing, IPM and opening of Ridgess and furrows, use of weedicides through farmers Rally, Newspapers and posters.
2. To acquire skills in handing of the weedicides, insecticides, applications of basal dose through sowing, opening of Ridgess furrows after set of monsoon, thimet, application calculation of NPK and preparation of NADEP compost through training is to be given.
3. Organization of exposure visits to ideal cotton fields of farmers, cotton research station of the universities and demonstrations are required to motivate the cotton growers for adoption of recommended practices.
4. On farm research on spacing, fertilizer management to be conducted on farmer field for determination and conviction by scientists.
5. Demonstrations covering all package of practices to be conducted to remove fear of loss from mind of cotton growers by Department of Agriculture.
6. Linkage with credit organizations like bank, Zilla Parishad, Government offices of Agricultural Department, etc., to be established for getting loan for purchase of inputs.
7. List of the agriculture input traders who are selling inputs is to be prepared and displayed in public places in the villages for making availability of inputs in time.

Table – 1

Personal, Socio-Economic Characteristics of the Respondents

N = 53

S.No.	Charasteristics	Number	Percentage
1.	**Age**		
	Young (upto 35 years)	16	30.80
	Middle Age (36 to 50 years)	25	48.10
	Old Age (51 and above)	11	26.10
2.	**Education**		
	Illiterate	06	11.50
	Middle	16	30.80
	High School and above	30	57.70
3.	**Caste**		
	Open	34	65.38
	O.B.C.	11	21.15
	NT/DNT	06	11.53
	SC	01	01.90
4.	**Land Holding**		
	Upto 4 ha	26	50.00
	4.1 to 10 ha	17	32.70
	10 ha and above	06	11.50
5.	**Occupation**		
	Agriculture Only	40	76.92
	Agriculture + Subsidiary	06	11.50
	Agriculture + Other	06	11.50
6.	**Family Size**		
	Upto 5 members	21	40.40
	Above 5 members	31	59.60
7.	**Annual Income (Rs.)**		
	Upto Rs.25,000/-	07	13.50
	25,001 to 75,000/-	28	53.80
	Above 75,000/-	17	32.70
8.	**Social Participation**		
	Non Participation	07	13.50
	Low Participation	28	32.80
	Medium Participation	14	26.90
	High Participation	03	05.60

Table - 2

Distribution of Respondents According to Utilization of Sources

Sl.No.	Sources	Number	Percentage	Ranking
1.	**Formal Personal Sources**			
	Gram Vistarak	42	80.70	I
	Agriculture Officer	15	28.80	IX
2.	**Informal Personal Sources**			
	Relative	18	34.60	VII
	Friends	20	38.40	VI
	Neighbour	17	32.70	VIII
3.	**Impersonal Sources**			
	News Papers	25	48.10	IV
	Agricultural Publications	21	40.40	V
	Television	32	71.60	III
	Radio	40	76.90	II

Table - 3

Distribution of Respondents According to Adoption of Recommended Practices of Cotton

Sl. No.	Recommended Practices	Full Adoption No.%		Partial Adoption No. %		No. Adoption No.%	
1	2	3	4	5	6		
I	**Preparatory Tillage**						
1	Ploughing cross. cross	15	28.8	35	67.4	2	3.80
2	Harrowing (Three)	31	59.6	21	40.4	-	-
3	Cleaning	49	94.2	-	-	3	58.00
4	Application of 40 Clof FYM	13	25.0	25	48.1	14	26.9
5	Method of Application (Placing below seed) mixing in soil by harrowing	7	13.5	22	40.4	4	7.70
6	Cropt Rotation	39	75.0	-	-	13	25.00
II	**Seed and Spacing**						
7	Use of NHH 44 hybrid seed	43	82.7	-	-	9	17.30
8	Quantity of seed/ha (2.5kg to 3kg)	20	38.5	32	61.5	-	-
9	Spacing 3' x 2', 2' x 2'	14	26.9	-	-	38	73.07
10	Time of sowing (Dry & immediately after on set of monsoon)	49	94.3	-	-	3(Late)	5.70
III	**Fertilizer Management Practices**						
11	Full Fertilizer dose N=80:P=40:K=40	16	30.8	33	63.5	3	5.70
12	Basal dose in the form of mixed	13	26.5	36	73.5	-	-
13	compound S.S.A. & M.O.P, Fertilizer	5	10.2	-	-	44	89.80
14	Time of Basal dose application (at the time of sowing)	11	22.4	-	-	38	77.50
15	Method of application (sowing)	5	10.2	-	-	44	84.80
16	Quantity of N as top dressing (40kg/ha.)	24	48.9	22	44.5	3	5.70
17	Type of fertilizers used for top dressing (urea)	40	86.9	-	-	9	13.10
18	Time of top dressing (35 to 40 days after sowing)	20	43.5	-	-	26	56.50
19	Method of application (Ring Method)	41	89.1	-	-	5	10.90
IV	**Inter Cultural Practices**						
20	Thining (up to one month)	29	55.8	-	-	23	44.20
21	Hoeings (4)	42	80.8	10	19.2	-	-
22	Opening of Ridges and furrows after set of monsoon.	8	15.4	-	-	44	84.60
23	Use of weedicides	-	-	-	-	52	100.00
24	Weeding without (herbicides (2))	47	90.4	5	9.6	-	-
V	**Plant Protection Practices**						
25	Application of Thimate	13	25.0	8	15.4	31	59.60
26	Plant Protection Schedule of Sprayings (6+3).	7	13.5	43	81.7	2	3.80
27	Use of low cost technologies like trap crop, peromen trap, light tarp, HNPV, Trico derma crisopa eggs etc.	-	-	-	-	52	100.00

Table - 4

Distribution of Respondents According to Adoption Gap in Cotton

SLNo.	Adoption Gap	Number	Percentage
1	Ploughing criss crops	37	71.20
2	Application of 40 CL of FYM	39	74.00
3	Full dose of fertilizers (80:40:40)	36	69.20
4	Application of Basal dose (40:40:40)	36	73.50
5	Basal dose in the form of compound, S.S.P. and M.Q.P.	44	89.80
6	Time of Basal dose application (at the time of sowing).	38	77.55
7	Method of basal dose application by sowing.	44	84.80
8	Quantity of top dressing (40kg N/ha.)	26	50.00
9	Spacing 3' x 2', 2' x 2'	38	73.00
10	Opening of Ridges and furrows after set of monsoon.	44	84.00
11	Use of weedicides (pendimythiline) Diuron, fluchoralin.	52	100.00
12	Thimate application	39	75.00
13	Plant protection schedule	45	86.50
14	IPM low cost technologies. (1) Trap crop, (2) Feroman trap, (3) Light trap, (4) Tricoderma and crisopa eggs.	52	100.00

Table – 5

Distribution of Respondents According to the Reasons

Sl.No.	Adoption Gap Reasons for Adopting Gaps	Numbers	Percentage
	Criss Crops Ploughing		
1	Ploughing is not practiced as its importance is not known. Only one ploughing is done.	12	23.0
2	Walking difficulty for bullock, for second ploughing.	5	9.6
3	No need after tractor heavy ploughing	24	46.0
	Application of 40 C.L. of FYM		
4	FYM is not available inadequate quantity	21	40.3
5	Number of animals are very less	15	28.8
6	No knowledge of NADEP for preparation of qampost in less quantity dung.	27	51.9
7	Chemical fertilizers are available hence no need for FYM.	19	36.5
	Spacing 3' x 2', 2' x 2'		
8	Due to excess vegetative growth there is no airation.	32	71.6
9	Small plants yield.	7	13.5
10	Straight growth without brancing.	4	7.7
11	Difficulties in interculture operation like hoeing occurs. Howing implement cannot pass through the lines with bullocks, damages to crop.	34	65.3
12	3'x2' spacing gives good yield is not known.	37	71.2
13	Difficulty in cotton picking.	18	34.6
14	Seed requirement is more.	31	59.6
15	Inter crop cannot be taken up.	9	17.3
	Basal Dose at the Time of Sowing		
16	Germination of the seed is affected due to excess heat paradoxed near seed when rains are not received after application.	18	34.6
17	Unavailability of labour during sowing time.	27	51.9
18	Lack of money.	31	59.6
19	Due to burning of seedlings.	11	21.10
20	Application of basal doe will be more useful to seeds than crop.	15	28.8
21	Not aware about the management of basal dose.	23	44.2
22	Basal dose application is useful to irrigated cotton not rainfed.	12	23.0
	Full Dose of Fertilizer		
23	High rates of the fertilizers.	38	73.07
24	Using of full dose of fertilizer is very risky in rainfed cotton.	33	63.46
25	Fertilizers are not available during sowint time.	19	36
	Use of Urea		
26	To increase more growth rate of crop.	12	23.0
27	Vigourous and suculant growth with shining.	21	40.3
28	Urea is cheap and available all the time.	18	34.6
29	Top dressing is not done when soil moisture is not in adequate.	11	21.1
30	Not completely aware about top dressing.	17	32.6
31	Due to pressure of other work during top dressing.	19	36.5
	Plant Protection Schedule		
32	Not completely aware.	39	75.0
33	Money investment is more.	25	48.0
34	Effects of insecticides are not seen.	17	32.6
	IPM Equipments, HNPV, Trap Crops		
35	Eggs, etc., not aware about there practices up till now.	52	100.00