Adoption of Recommended Dry Farming Technology of Cotton in North Gujarat

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ABSTRACT

An analysis of the adoption pattern of dry farming technologies of cotton revealed that farmers had adopted simple and no cost/low cost technologies. The technologies involved more cost and are complex in nature were not adopted. The technologies of application of chemical fertilizers, improved variety, time of sowing, irrigation and plant protection were not adopted by the farmers.

Introduction

Cotton is grown on a large scale in Gujarat and about two-third area is under rainfed cotton. The Vagad zone (covering Surendranagar, Ahmedabad, Mehsana, Patan, Banaskantha and Kutch districts) is well known for cultivation of cotton under adverse conditions of soil, water and environment. As there are very limited alternatives for selection of crop, the farmers of the area are compelled to opt for cotton growing. The Gujarat Agricultural University has developed a set of technologies for cultivation of cotton in rainfed areas. The present research was undertaken with following specific objectives:

1. To study the extent of adoption of recommended dry farming technologies of cotton.

2. To explore the relationship between socio-economic attributes of cotton growers and their extent of adoption.

3. To know the reasons for non-adoption of recommended dry farming cotton technology.

Methodology

The study was undertaken in Chanasma, Sami, Harij, Becharaji, Radhanpur and Santalpur talukas of Patan district. All the six talukas were selected purposively for the study as the cotton crop is growing extensively under dry farming and the whole area is under rainfed cotton cultivation.

Table 1: Distribution of the respondents according to their level of adoption

(n = 120)

Sr. No.	Level of knowledge	No.	Per cent
1.	Low level (Below 10.69 score)	15	12.50
2.	Medium level (Between 10.69 and 15.13)	93	77.50
3.	High level (Above 15.13 score)	12	10.00

X = 12.9167   S.D. = 2.2175

Four villages from each taluka and five farmers from each village were selected randomly for getting responses. Thus, the sample size consisted of 120 cotton growers. Interview scheduled was developed in light of the objectives and the farmers were personally interviewed for getting their responses. The data thus collected were then tabulated and analyzed.

Results and Discussion

(A)   Extent of Adoption

It is apparent from the data presented in Table-1 that 77.50 per cent of the cotton growers had medium level of adoption. There were 12.50 and 10.00 per cent of the cotton growers who had low and high level of adoption, respectively.

An effort was made to know the details of adoption pattern as which technologies were adopted by the farmers. The data are presented in Table 2.

The result of the study reported in Table-2 revealed that all the farmers had adopted the practices like method of sowing and inter-culturing. An overwhelming majority has also adopted the practices like tillage (91.66 %), variety (95.83 %), seed treatment with

Table 2:   Distribution of the respondents according to their adoption of different dry farming technologies of cotton   (n = 120)

Sr. No.	Practices	Extent of adoption	
		No.	Per cent
1.	Tillage	110	91.66
2.	FYM application	61	50.83
3.	Chemical fertilizer basal dose :		
(a)	12.5-0-0	47	39.17
(b)	20-0-0	05	4.17
4.	Selection of variety :		
(a)	V-797	115	95.83
(b)	Other improved	15	12.50
5.	Sowing distance and seed rate :		
(a)	90 cm drilling (10 to 12 kg)	82	68.33
(b)	120 cm drilling (8 to 10 kg)	55	45.83
6.	Seed treatment :		
(a)	Mud and Ash	103	85.83
(b)	Ceresan/Agrosan	0	0.00
7.	Time of sowing :		
(a)	Early	95	76.16
(b)	Late	39	32.50
8.	Method of sowing – Tractor/Bullock	120	100.00
9.	Thinning	71	59.17
10.	Top dressing :		
(a)	12.5-0-0	74	61.67
(b)	20-0-0	0	0.00
11.	Inter-culturing	120	100.00
12.	Hand weeding	116	96.67
13.	Irrigation :		
(a)	One irrigation	23	19.17
(b)	Two irrigation	43	35.83
14.	Pest protection :		
(a)	Pest control	37	30.83
(b)	Diseases control	24	20.00
15.	Harvesting (3 to 4 picking)	108	98.33

mud and ash mixture (85.83 %), weeding (96.67 %) and harvesting (98.33 %). The data further revealed that the majority of the farmers had adopted the practices like FYM application (50.83 %), sowing distance (90 cm drilling) (68.33 %), time of sowing (76.16 %), top dressing of 12.5-0-0 dose (61.67 %). Not a single farmer had adopted the practices like seed treatment with Ceresan and top dressing with basal dose of 20-0-0.

that education and outside contact makes a farmer knowledgeable which in turn leads to higher level of adoption.

(C) Reasons for non-adoption of technologies

The respondents were asked to give the reasons for non-adoption of the practices of dry farming cotton. The responses were presented in Table-5. The data in the Table-

Table 3:   Relationship between selected characteristics of the respondents and their knowledge and adoption level   (n = 120)

Sr. No.	Characteristics	'r' value Adoption
X_1	Age	0.06329
X_2	Education	0.24497 **
X_3	Land holding	0.03109
X_4	Experience	0.4607
X_5	Family size	0.08376
X_6	Social participation	0.21616 **
X_7	Extension participation	0.34311 **
Y_1	Knowledge	0.72252 **

** Significant at 0.01 level of probability

It can be concluded from the results that farmers were having high adoption in no cost and low cost technologies instead of practices which are complex and more technical in nature.

(B) Correlation of personal characteristics with level of adoption

It could be seen from the Table-3 that among selected seven personal attributes of the cotton growers, only four *viz.,* education, social participation, extension participation and level of knowledge were positively and significantly correlated with their level of adoption. It can be inferred from the results

5 reflected that for the technologies of use of FYM, the farmers are unable to apply FYM every year as the size of holding is large. The shortage of moisture (56.66 %) was considered to be the main reason followed by uncertain nature of rainfall (23.33 %) for non adoption of technology of chemical fertilizers.

Majority (65.00 %) of the farmers told that the lack of knowledge about improved variety was the main reason for non-adoption of the recommended improved varieties.

The main reason for non-adoption of sowing distance and seed rate were not only the irregular and inadequate rainfall but also

Table 4: Reasons given by farmers for non-adoption of recommended dry farming cotton technology (n = 120)

Sr. No.	Practices	No.	Percent
1.	**Use of FYM :**		
	(a) Non-availability of FYM in required quantity	22	18.33
	(b) Unable to apply every year due to large holding	61	50.83
	(c) Do not believe to purchase	27	22.50
	(d) Costly	22	18.33
2.	**Use of chemical fertilizer :**		
	(a) Uncertain nature of rainfall	28	23.33
	(b) It spoil the soil	16	13.33
	(c) Shortage of moisture	68	56.66
	(d) Costly	26	21.66
3.	**Use of improved variety :**		
	(a) Lack of knowledge	78	65.00
	(b) Lack of availability of seed	42	35.00
4.	**Sowing distance and seed rate :**		
	(a) Irregular and inadequate rainfall	67	55.83
	(b) For maintaining plant population	43	35.83
5.	**Sowing time :**		
	(a) Uncertainty of start of monsoon	76	63.33
	(b) Problematic soil type	32	26.66
6.	**Seed treatment :**		
	(a) Lack of knowledge	42	35.00
	(b) Less problem of pest and disease in desi cotton	17	14.16
7.	**Thinning**		
	(a) Not required in rainfed condition to conpensate the plant loss afterwards	22	18.33
	(b) They are expert in sowing	24	20.00
8.	**Irrigation :**		
	(a) No facility for irrigation	38	31.66
	(b) Shortage of irrigation water	43	35.83
	(c) Bad quality of irrigation water	17	14.16
	(d) Crop production decrease in next year	22	18.33
9.	**Plant protection measures :**		
	(a) Lack of knowledge about incidence of pest and disease and their control measures	53	44.16
	(b) Pest and diseases do not occur in rainfed cotton	35	29.16
	(c) It increases cost of production	25	20.83

the uncertainty of start of monsoon. Regarding seed treatment, lack of knowledge was the reason reported by 35.00 per cent of the farmers.

In case of plant protection measures, lack of knowledge about incidence of pest and disease and their control measures was the main reason reported by 44.16 per cent of the farmers.

In nut shell, the uncertain rainfall and lake of knowledge were major reasons for non-adoption of many technologies.

Conclusion

The results of the study indicated that the farmers had adopted no cost and low cost technologies as compared to the technologies that involve more cost and complex in nature. The education, knowledge and social as well as extension participation were significantly correlated with the level of adoption.

Important reasons reported for non-adoption of the various dry farming technologies included lack of knowledge and uncertain, inadequate & irregular rainfall. The results clearly indicated that since extension participation and thereby improved level of knowledge had direct correlation with adoption. The reasons reported for non-adoption also included lake of knowledge. As such, there is a need and scope for intensive extension efforts for increasing level of knowledge of these farmers.