

## CONSTRAINTS PERCEIVED BY THE FARMERS OF MAHESANA DISTRICT IN ADOPTION OF MICRO IRRIGATION SYSTEM

J.K. Patel<sup>1</sup>, R.R. Prajapati<sup>2</sup> and V.T. Patel<sup>3</sup>

1& 2 Assistant Professor, Department of Extension Education, CPCA, SDAU, SKNagar-385506

3 Professor & Head, Department of Extension Education, CPCA, SDAU, SKNagar-385506

Email : jk\_sweta@yahoo.in

### ABSTRACT

*The study was conducted in Mahesana district of Gujarat state. Using the multistage random sampling technique, a sample consisting of 150 farmers of 15 villages was selected for the study. The results of the study revealed that majority of the farmers were found in old age group, had primary to secondary education, had social participation in more than one organization, were found cultivating small and medium size of land holding, followed the cotton/castor based cropping pattern, cultivated the crops at less than 200 percent cropping intensity, had annual income below Rs. 1, 50,000, had medium utilization of information sources, tube well as a main source of irrigation and medium level of innovativeness. The important constraints perceived by farmers in adopting Micro Irrigation System were; small farms, scattered farmstead, high rate with subsidy scheme, local cropping pattern, damage due to pig/blue bull, high initial investment, lack of after sales services from company, hassel in availing loan and lack of service for maintenance and repairing. Major suggestions given by the farmers were; periodic evaluation of MIS set, training the distributors, dealers and farmers, rate of subsidy should be flat for each group of farmers, technical advisory for run and maintenance be available and preparation of MIS design as per crop.*

**Keywords:** *innovativeness, drip irrigation, sprinkler irrigation, constraints, suggestions*

### INTRODUCTION

The adoption of Micro Irrigation systems is likely to pick up fast in arid and semi-arid, well-irrigated areas, where groundwater is scarce. Micro Irrigation Systems encompass low-cost drip and sprinklers. Micro irrigation can maximize crop productivity and protect the environment through conserving soil, water and fertilizer resources, besides increasing farmer income. Analyzing the potential impact of Micro Irrigation systems on the aggregate demand for water in crop production involves three important considerations. The first concerns the extent of coverage that can be achieved in adoption of Micro Irrigation system at the state or district level. The second concerns the extent of real water saving possible with adoption of Micro Irrigation system at the field level. The third concerns what farmers do with the water saved through MI systems, and the changes in the cropping systems associated with such adoption. There is limited analysis available on the potential coverage of MI systems in different district. Where we find its adoption in one district it is very high and in another it is very low as compared to other district in the state. It is known that the adoption of Micro

Irrigation System is very less in Mahesana district as compare to other neighboring districts in North Gujarat. Hence the study entitled to analyze the constraints in adoption of MIS by the farmers of Mahesana district is designed to undertake.

### OBJECTIVES

- (a) To study the selected characteristics of the farmers
- (b) To identify and analyze the constraints in adoption of Micro Irrigation System as perceived by farmers
- (c) To seek suggestions to overcome the constraints in adoption of Micro Irrigation System by the farmers

### METHODOLOGY

This study was conducted in Mahesana district of Gujarat state. The district was purposively selected for the study as the micro irrigation system is less adopted by the farmers. The purpose of the study is to identify and analyze the constraints perceived by the farmers. Why the farmers are not adopting the micro irrigation system in Mahesana District? Though it is very much beneficial to the farmers and

government is also promoting the system.

Mahesana District comprises of nine talukas out of which, three talukas viz; Unjha, Visnagar and Bhecharaji were randomly selected for the study. From each selected talukas five villages were randomly selected. Further ten farmers from each village were selected consisting a sample of 150 farmers for the study. Constraints in use of new technology never end, they can be minimized. The respondents were

requested to express the constraints perceived by the farmers in adoption of MIS. Frequency and percentage for each constraint were calculated and on that basis, the constraints were ranked. Then suggestions offered were tabulated according to frequency and percentage of respondents and ranks were assigned. Interview schedule was constituted for collection of the data. Appropriate statistical tools were used to interpret the data and to draw the conclusions.

**RESULTS AND DISCUSSION**

**Table 1: Characteristics of the respondents**

**n=150**

Sr. No.	Characteristics	Category	No.	Percent
1	Age	Young (Up to 35 years)	07	04.67
		Middle (36 to 50 years)	57	38.00
		Old (Above 50 years)	86	57.33
2	Education	Illiterate	05	03.33
		Primary (up to VII )	28	18.67
		Secondary (VIII to X )	61	40.66
		Higher Secondary (XI to XII)	28	18.67
		College	28	18.67
3	Social participation	No membership	04	02.67
		Membership in one organization	35	23.33
		Membership in more than one organization	111	74.00
		Office bearer	34	22.66
4	Land holding	Marginal ( Below 1.0 ha)	40	26.66
		Small ( 1.01 to 2.0 ha)	63	42.00
		Medium 2.01 to 4.0 ha)	28	18.67
		Big ( Above 4.0 ha)	19	12.67
5	Annual income	Up to Rs.50,000/-	47	31.33
		Rs.50,001 to 1,00,000/-	52	34.67
		Rs.1,00,001 to 1,50,000/-	18	12.00
		Rs.1,50,001 to 2,00,000/-	18	12.00
		Above Rs.2,00,000/-	15	10.00
6	Cropping intensity	100 to 150	63	42.00
		151 to 200	55	36.67
		201 to 250	32	21.33
		251 to 300	00	00.00
7	Cropping pattern	Cotton – Cotton – Fallow / Castor – Castor – Fallow	76	50.67
		Pulses – Wheat - Fallow / Cotton – Fennel - Fallow	52	34.67
		Vegetables – Vegetables – Vegetables ( Chilly – Brinjal) / Guar – Wheat - Fallow	22	14.66
8	Source of irrigation	Tube well	97	64.66
		Tube well + canal	46	30.67
		Others (Lift irrigation through tank)	07	04.67
9	Utilization of information sources	Low ( Below 13.74 scores)	21	14.00
		Medium (13.74 to 30.61 scores)	101	67.33
		High ( Above 30.61 scores)	28	18.67
10	Innovativeness	Low ( Below 6.05 scores)	39	26.00
		Medium (6.05 to 14.17 scores)	105	70.00
		High ( Above 14.17 scores)	06	04.00

A perusal from the data in Table 1 indicate that more than half (57.33 %) of the farmers were found in old age group and three-fifth (59.33 %) had primary to secondary education. Majority (74.00%) had member in more than one organization, nearly two-thirds (68.66%) were found cultivating small and medium size of land holding and half (50.66 %) of them

followed the cotton/castor based cropping pattern. More than three-fourth (78.67 %) had less than 200 percent cropping intensity, annual income below Rs. 1, 50,000. Majority of the farmers had medium utilization of information sources (67.33 %), tube well as a main source of irrigation (64.66%) and medium level of innovativeness (70.00%).

**Table 2: Constraints faced by the respondents in adoption of Micro Irrigation System**

**n=150**

Sr. No.	Constraints	Frequency	Percent	Rank	Overall Rank
<b>I</b>	<b>Technical Constraints</b>				
1	Lack of after sales services from company	63	42.00	I	VII
2	Lack of service for maintenance and Repairing	59	39.33	II	IX
3	Variability in irrigation requirement to crops	55	36.66	III	X
4	Needs high technical knowledge	52	34.66	IV	
5	Misunderstanding about MIS	43	28.66	V	
6	Lack of alternate/machinery to maintain pressure in MIS	40	26.66	VI	
7	Lack of Knowledge about MIS	29	17.33	VII	
<b>II</b>	<b>Economic constraints</b>				
1	High initial investment	65	43.33	I	VI
2	Hassel in availing loan	60	40.00	II	VIII
3	Flat rate of electricity for different H.P	55	36.66	III	X
4	Unequal standard of subsidy	44	29.33	IV	
5	Weak economic condition	10	06.66	V	
<b>III</b>	<b>Situational constraints</b>				
1	Small farms	112	74.66	I	I
2	Scattered farmstead	106	70.66	II	II
3	High rate with subsidy scheme	92	61.33	III	III
4	Local cropping pattern	86	57.33	IV	IV
5	Damage due to pig/blue bull	69	46.00	V	V
6	Damage due to rat/pest	50	33.33	VI	
7	Fear of theft	30	20.00	VII	

It is evident from Table 2 that, the overall constraints perceived by the respondents in adoption of MIS were small farms (74.66%), scattered farmstead (70.66%), high rate with subsidy scheme (61.33%), local cropping pattern (57.33%), damage due to pig/blue bull (46.00%) were very important constraints as perceived by the farmers and were ranked first, second, third, fourth and fifth respectively.

Further high initial investment (43.33%), lack of after sales services from company (42.00%), hassel in availing loan (40.00%), lack of service for maintenance and Repairing (39.33%), variability in irrigation requirement to crops and flat rate of electricity for different H.P (36.66%) were less important constraints as order of importance given

by the respondents.

It can be thus concluded that small farms, scattered farmstead, high rate with subsidy scheme, local cropping pattern, damage due to pig/blue bull, high initial investment, lack of after sales services from company, hassel in availing loan and lack of service for maintenance and Repairing were the major constraints perceived by the farmers in adoption of Micro Irrigation System.

The information collected regarding suggestions given by the farmers is presented in Table 3. This finding is in agreement with the finding of Timbadia (2001) and Suthar (2010).

**Table 3: Suggestion to overcome constraints faced by the respondents in adoption of Micro Irrigation System**

n=150

Sr. No.	Suggestions	Frequency	Percent	Rank
1	Periodic evaluation of MIS set	103	68.66	I
2	Training the distributors, dealers and farmers	100	66.66	II
3	Rate of subsidy should be flat for each group of farmers	96	64.00	III
4	Technical advisory for run and maintenance be available	79	52.66	IV
5	Preparation of MIS design as per crop	78	52.00	V
6	Low cost MIS set for small and marginal farmers	74	49.33	VI
7	Subsidy should be given directly to the farmers	59	39.33	VII
8	Farmers are allowed to purchase MIS from open market	55	36.66	VIII
9	Train rural youth regarding MIS installation, maintainance	47	31.33	IX
10	MIS adopters be supported for wire fancing to protect MIS	45	30.00	X
11	Cost of overhead tank/hoge be included in subsidy	45	30.00	X

The information collected regarding valuable suggestion given by the farmers is presented in Table 3. The data in Table 3 indicates that majority of the farmers given suggestion were periodic evaluation of MIS set (68.66 per cent), training the distributors, dealers and farmers (66.66 per cent), rate of subsidy should be flat for each group of farmers (64.00 per cent), technical advisory for run and maintenance be available (52.66 per cent) and preparation of MIS design as per crop (52.00 per cent) were the most important suggestions offered by the respondents and ranked first, second, third, fourth and fifth respectively. Other suggestion given by the farmers were low cost MIS set for small and marginal farmers (49.33 per cent), subsidy should be given directly to the farmers (39.33 per cent), farmers are allowed to purchase MIS from open market (36.66 per cent), train rural youth regarding MIS installation, maintenance (31.33 per cent), MIS adopters be supported for wire fencing to protect MIS (45.00 per cent) and cost of overhead tank/hoge be included in subsidy (45.00 per cent) were ranked sixth, seventh, eighth and ninth respectively.

From the foregoing discussion it can be concluded that major suggestions given by the farmers were; periodic evaluation of MIS set, training the distributors, dealers and farmers, rate of subsidy should be flat for each group of farmers, technical advisory for run and maintenance be available and preparation of MIS design as per crop. This finding is in line with those of Chaudhari (1995), Desai *et.al* (2000) and Kalsariya *et.al* (2003).

**CONCLUSION**

The results of the study revealed that majority

of the farmers were found in old age group, had primary to secondary education, had social participation in more than one organization, were found cultivating small and medium size of land holding, followed the cotton/castor based cropping pattern, cultivated the crops at less than 200 percent cropping intensity, had annual income below Rs. 1, 50,000, had medium utilization of information sources, tube well as a main source of irrigation and medium level of innovativeness.

From the above discussion it can be concluded that majority farmers perceived constraints in adoption of MIS were small farms, scattered farmstead, high rate with subsidy scheme, local cropping pattern, damage due to rat/pest, high initial investment, lack of after sales services from company, hassel in availing loan and lack of service for maintenance and Repairing. To overcome these constraints major suggestions given by the farmers were; periodic evaluation of MIS set, training the distributors, dealers and farmers, rate of subsidy should be flat for each group of farmers, technical advisory to run and maintenance be available and preparation of MIS design as per crop.

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