

## ASSOCIATION BETWEEN ATTRIBUTES OF THE FARMERS AND THEIR KNOWLEDGE AND ADOPTION OF MICRO IRRIGATION SYSTEM

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### ABSTRACT

*Study was conducted to assess knowledge and extent of adoption of Drip and Sprinkler irrigation system in Deesa, Dantiwada and Palanpur talukas where such irrigation system is widely adopted. Total 120 farmers who adopted the micro irrigation system were selected purposively from the above three talukas for the study, information collected with the help of structured interview schedule and level of knowledge and extent of adoption were measured. The majority of the MIS adopter's possessed medium level of knowledge and extent of adoption regarding the techniques of MIS. The extent of adoption of the respondents was positively correlated only with type of irrigation system. The majority of the respondents had adequate knowledge regarding the various techniques of MIS but very few respondents know about the chemical (sulphuric acid) which is used for cleaning the lateral pipe and saving of chemical fertilizers if applied through drip irrigation system. In case of adoption of MIS recommendation only 3.33 percent and 42.5 per cent of the respondents adopted the recommended installation distance (12x12 meter) inter and intra row of sprinkler and pressure (2.75 kg/cm<sup>2</sup>) respectively. None of them adopted the irrigation schedule.*

### INTRODUCTION

The Banaskantha District falls under arid and semi arid region with erratic rainfall. Traditionally, crop irrigation is done through flooding of the fields which resulted in loss of the valuable natural resource and hardly 30 to 40 percent of total water is utilized, the remaining resulted in the sprouting of extensive emergence of weeds and hence the related consequences of disease, insect pest, etc.

Now a day quality of water and its availability is one of the major issues in the district, as the water table of the area is continuously going down.

Micro irrigation system such as drip and sprinkler irrigation is one such technique which has received wide acceptance in this district for last five years, it

has proved advantage such as efficiency besides, it is effective in utilizing water and saves 50 to 70.00 per cent water in various crops, it is also effective in increasing the productivity & quality of produce, minimum growth of weed, more area can be covered under irrigation with available water and electricity. In this study our emphasis was to carry out excessive survey work of the villages where drip and sprinkler irrigation system adopted with a view to check the level of knowledge and extent of adoption of Drip and Sprinkler irrigation system.

### METHODOLOGY

This investigation was carried out in Deesa, Dantiwada and Palanpur talukas. These talukas were selected purposively because farmers of

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these talukas adopted the micro irrigation system. 120 farmers who adopted the micro irrigation system were selected purposively from the above three talukas for the study, and information collected with the help of structured interview schedule. Level of knowledge and extent of adoption were measured by scale developed

by Jha and Singh (1970) and formula developed by Sengupta (1967), respectively with due modification. The appropriate statistical tools were used for analyzing the data.

## RESULT AND DISCUSSION

The result found after the analysis of research data are depicted below.

**Table: 1 Level of knowledge regarding micro irrigation system**

n=120

Sr.No	Particulars	No.	percent
1	46 percent water can be saved by using sprinkler irrigation system in potato crop.	70	58.33
2	70 percent water can be saved by using drip irrigation system in potato crop.	73	60.83
3	Irrigate the potato crop through MIS at early morning or late night for minimize the evaporation losses.	116	96.67
4	Water soluble fertilizers can be applied through MIS.	118	98.33
5	Filter, main pipeline, lateral line and dripper are the main parts of drip irrigation system.	117	97.50
6	20 percent Nitrogenous and potash fertilizers can be saved in drip irrigation system.	46	38.33
7	On and average 20 percent potato production can be increased in drip irrigation system.	93	77.50
8	Advantages of MIS : 1. water saving 2. Fertilizers and insecticide saving 3. irrigate the crop at any time by water tank. 4. labour saving 5.crop production increase.	114	95.00
9	sulphuric acid chemical is used for cleaning the lateral pipe	23	19.17
10	Sprinkler irrigation system is useful in those crops which are dwarf in height, narrow sowing distance or broadcasted crops and tuber crops.	117	97.50
11	MIS irrigation system is recommended for potato crop.	110	91.67
12	Sprinkler and drip irrigation system is used in leveled as well as sloppy and undulated land.	115	95.83
13	Filter is the heart of MIS. If it is not working, whole system chocked.	117	97.50
14	Drip irrigation system is more suitable when distance between two rows and within plant is wider.	111	92.50

Data in Table 1 reveal that majority of the MIS adopters had adequate knowledge regarding various techniques of micro irrigation system viz., water saving through sprinkle in potato (58.33%); through drip (60.83%); time of irrigation (96.67%); chemical fertilizers application through MIS (98.33%); main parts of MIS system (97.50%); yield increase through MIS application (77.5%); advantages of MIS (97.5%); use of MIS in potato crop (91.67%); land topography for the use of MIS

(95.83%); filter and its importance in MIS (97.5%) and drip is more suitable for wider spacing crop (92.5%).

Very less number (19.17%) of MIS adopters know about the chemical (sulphuric acid) which is used in cleaning the lateral pipe. Nitrogenous and potash fertilizers can be saved in drip irrigation system (38.33%). This finding is in line with the finding of Suthar (2010).

**Table 2: Adoption of sprinkler irrigation system**

n=120

Sr. No.	Technology	No	Percentage
1	12 X 12 meter distance is recommended for inter and intra row of sprinkler in potato crop.	04	03.33
2	Irrigation through sprinkler in potato crop. - First irrigation at sowing time. - Second irrigation 8 DAS -Remaining irrigation 12 -14 days interval.	00	0.00
3	2.75 kg/cm <sup>2</sup> pressure in sprinkler irrigation system is recommended for potato crop.	51	42.50

Data in Table 2 revealed that very few (3.33 percent) of the respondent adopted the recommended inter and intra row spacing distance between two sprinkler for the installations of sprinkler irrigation system. Most of the farmers adopted 10 X 10 meter distance between inters and intra row of sprinkler subject to design parameters of the product. day and run the system 2.0 hours per day.

None of the farmers adopted the recommended irrigation schedule of sprinkler irrigation. Most of the farmers irrigated their crop at every alternate

In case of pressure maintenance in sprinkler irrigation, only 42.50 percent of the farmers adopted the (2.75 kg/cm<sup>2</sup> pressure) recommended pressure.

**Table 3: Distribution of the respondents according to their knowledge level regarding recommended technology of MIS**

n = 120

Sr. No.	Categories	Score range	Number	Percent
1	Low level	Up to 24.00	38	31.66
2	Medium level	24.01 to 27.00	80	66.66
3	High level	above 27.00	02	1.68

Mean: 25.33

SD= 1.47

Data in Table: 3 reveal that majority of the respondents (66.66 percent) had medium level of knowledge while 31.66 percent of the respondents

had low level of knowledge. The findings are in conformity with finding of Jat (2010)

**Table 4: Distribution of the respondents according to their extent of adoption of recommended technology of MIS**

n=120

Sr. No.	Categories	Score range	Number	Percent
1	Low extent of adoption	Up to 4.00	00	00.00
2	Medium extent of adoption	4.01 to 8.00	116	97.00
3	High extent of adoption	above 8.00	04	03.00

Mean = 6.05

SD= 1.70

Data in Table: 4 reveal that majority of the respondents (97.00 percent) had medium extent of adoption while 03.00 percent of the respondents

had high extent of adoption. This finding was in accordance with Patel (2008).

**Table 5: Correlation of MIS adopters' selected characteristics with their level of knowledge and adoption.**

n = 120

Sr. No.	Characteristics	r value	
		Knowledge	Adoption
1	Age	0.08507	0.18350
2	Education	-0.18574	0.11034
3	Type of family	-0.15824	0.15787
4	Size of family	-0.01186	0.02559
5	Type of Irrigation	0.05840	0.50332**
6	Social participation	-0.00737	0.02791
7	Extension contact	-0.0000	0.00424
8	Annual Income	-0.03387	-0.09635
9	Size of land holding	-0.04056	-0.07399
10	Occupation	0.03113	0.11034
11	Economic motivation	-0.09472	-0.05480
12	Risk preference	-0.03233	-0.03066
13	Scientific Orientation	-0.01290	-0.12704
14	Cosmopolitaness-Localiteness	-0.00468	0.00745

\* Significant at 0.05 level of probability

\*\*Significant at 0.01 level of probability

A perusal of data presented in Table - 5 reveal that none of the characteristics of the farmers had established significant association with knowledge & adoption but only type of irrigation was highly significant with adoption of micro irrigation system.

## CONCLUSIONS

From the above findings it can be concluded that majority of the MIS adopter's possessed medium level of knowledge and extent of adoption regarding the techniques of MIS.

Results revealed that majority of the respondents had adequate knowledge regarding the various techniques of MIS but very few respondents know about the chemicals (sulphuric acid) which are used for cleaning the lateral pipe and saving of chemical fertilizers applied through drip irrigation system.

In case of adoption of MIS recommendation only 3.33 percent and 42.5 per cent of the respondents adapted the recommended installation distance (12x12 meter) inter and intra row of sprinkler and pressure (2.75 kg/cm<sup>2</sup>) respectively. None of them adopted the irrigation schedule.

It could be also concluded from the results that

the extent of adoption of the respondents was established positively correlated only with type of irrigation.

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