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AWARENESS AND ADOPTION LEVEL OF FARMERS FOR SPRINKLER IRRIGATION SYSTEM

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Abstract: The present study was undertaken in Rajkot district of Gujarat to examine the awareness and adoption level of famers for sprinkler irrigation system. For the study 160 farmers were randomly selected. It was discovered that most of the farmers were belonged to old and middle age group, general category and only few farmers are having higher education. Most of the farmers having high to very high level of awareness and adoption for sprinkler irrigation system.
Keywords: Sprinkler Irrigation System, Awareness, Adoption

Introduction

Agriculture is backbone of the Indian economy. As Sardar Patel said "The real India lies in villages. The farmer is the father of nation, who digs the wealth from soils. If he is properly trained in skills and new knowledge of scientific agriculture, he will produce more and higher wealth". Over 58 per cent of the rural households depend on agriculture as their principal means of livelihood. Indian agriculture provides food to 1.25 billion people. It accounts around 15.35 per cent of India's GDP in 2015-16. Irrigation has played a decisive role in India to avail increased agricultural production. The success of agriculture is in extricable linked with development of irrigation since rainfall is concentrated essentially only in four months of the year and irrigation facilities are critical to cultivate more than one crop in year.

To achieve required food production with increasing population, India has to enhance the current irrigation potential of 91 M. ha. to 160 M. ha. But, the total water resources estimated are 230 M. ha will have to cater the need to the non-agricultural uses also. The country is likely to be water stressed in the coming years. Therefore hand in hand with technologies for water harvesting and storage, technologies for precise water application methods needed (Bhaskar *et*

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al., 2005).

Sprinkler irrigation system is known since 1946, yet the farmers started adopting it in large scale only since 1980s. Which was started in the hilly areas of Western Ghats in states of Kerala, Tamil Nadu, Karnataka and in the North Eastern states, mainly for plantation crops like coffee, tea, cardamom, rubber etc. Slowly it spreads to the water scarcity and light soil states of Rajasthan and Haryana in addition to the black soil area of Madhya Pradesh. Madhya Pradesh contributes 1.5 lakhs hectare which is almost 25 per cent of the total area under sprinkler in the country (6.7 lakh hectares). This is followed by West Bengal, Assam, Haryana and Rajasthan. The potential for coverage under sprinkler irrigation is estimated to be about 42.5 million ha. Government of India has taken an initiative to give subsidy to the farmers to an extent even up to 50 per cent in order to popularize this method of water application. Earlier Aluminum was used as piping material. Now days High Density Polyethylene (HDPE) and Poly Vinyl Chloride (PVC) pipes are extensively used due to its higher strength, low energy low friction and lower cost.

Material and methods

The study was confined to Rajkot district of Gujarat. From Rajkot district two taluka were selected and from each taluka total 80 farmers were selected. Hence, total 160 farmers were selected for the study from Rajkot district. The data were collected with the help of the well prepared questionnaires through personal interview of the farmers. Primary data on various variable such as socio economic profile of farmers, their awareness and adoption level for sprinkler were gathered.

To study the socio-economic profile of farmers in Rajkot district, simple tabular method was used. The parameters such as age, caste, marital status, size of family, education level, annual income, farming experience, irrigated area, source of irrigation, social participation were included for the study.

To measure awareness of farmers about Sprinkler Irrigation System (SIS), eight criteria such as high irrigation efficiency due to uniform distribution of water, accurate and easy measurement of water applied, soluble fertilizer, herbicides and fungicides can be applied in the irrigation water, land levelling is not essential, sprinkler irrigation system reduced labour demand, suits to all types of land terrain and also suitable to waste water, no soil erosion which saves land were used while seven criteria such as water pressure used, distance between two nozzles, irrigation interval, height of riser, prior giving irrigation flush out the water left from the pipe, time of irrigation in one setting, subsidy and insurance of sprinkler irrigation system

can help to increase the adoption of sprinkler irrigation system were used to measure level of adoption by the farmers.

The awareness and adoption of level of farmers for SIS was availed on a two point such as "Yes" and "No". These two categories were assigned scores of 1 for "Yes" and 0 for "No" responses. The qualification of total score of SIS by farmer was done by totaling these scores of all sub scores received by the respondents. The maximum obtainable score by the respondents was 8 and minimum was 0 for awareness and was 7 and 0 for adoption. Class interval were obtained with the help of following formula:

$$\text{Class Interval} = \frac{\text{Maximum possible score} - \text{Minimum possible score}}{\text{Number of categories}}$$

Results and discussion

1. Socio-economic profile of the farmers

A perusal of Table 1 shows that old and middle age group of farmers are more active in farming than young age group and majority of the farmers belongs to general and OBC category. It shows that majority of the farmers are married and they have 4 to 5 member in their family. 23.75 per cent of farmers having the education up to primary level, followed by secondary level (23.32 %), graduate (18.13 %), higher secondary (13.13 %), illiterate (10 %) and only 3 farmers are post graduate, their income is low and majority of the farmers having more than 15 years farming experience. 46.25 per cent of farmers having medium, 43.13 per cent of farmers having small and 10.62 per cent of farmers having large irrigated area and the farmers depend either on open well or bore well for irrigation. Social participation of farmers is negligible.

Table 1 Socio-economic profile of farmers (n = 160)

Variables		Per-cent
Age	Young Age (Up to 35 years)	25.62
	Middle Age (Between 35 to 50 years)	33.13
	Old Age (Above 50 years)	41.25
Caste	General	43.12
	SC	9.38
	ST	6.88
	OBC	43.12
Marital Status	Married	96.25
	Unmarried	3.75

Size of Family	Up to 3 members	18.12
	4 and 5 members	55.00
	More than 5 members	26.88
Education Level	Illiterate	10.00
	Primary	23.75
	Secondary	33.12
	Higher secondary	13.13
	Graduation	18.12
	Post-graduation	01.88
Annual Income	Low income (Up to 2,00,00)	90.62
	Medium income (Between 2,00,001 to 5,00,00)	08.75
	High income (Above 5,00,00)	00.63
Farming Experience	5 years	05.00
	6-15 years	20.00
	16-30 years	35.00
	More than 30 years	40.00
Irrigated Area	Small (up to 2 ha.)	43.13
	Medium (2.1 to 5 ha.)	46.25
	Large (above 5 ha.)	10.62
Source of Irrigation	Canal	01.25
	Bore well	25.00
	Open well	73.75
	Other	00.00
Social Participation	No membership	98.12
	One organization	01.88
	More than one organization	00.00

2. Awareness and Adoption Level of Farmers for Sprinkler Irrigation System

Awareness is the consciousness of an individual towards sprinkler irrigation system. The table 2 shows that 58.75 per cent of the farmers having high level of awareness towards sprinkler irrigation system, followed by 28.75 per cent, 10.00 per cent and 2.50 per cent, having very

high, low and very low level of awareness respectively. No any farmer is unaware about sprinkler irrigation system.

Table 2: Awareness of farmers for SIS (n = 80)

No.	Level of Awareness	Number	Percent
1	Unaware (0.00 to 1.60)	00	00.00
2	Very low (1.61 to 3.20)	02	02.50
3	Low (3.21 to 4.80)	08	10.00
4	High (4.81 to 6.40)	47	58.75
5	Very high (6.41 to 8.00)	23	28.75
Total		**80**	**100**

Table 3 Adoption level of farmers for SIS (n = 80)

No.	Level of Adoption	Number	Per cent
1	No adoption (0.00 to 1.40)	00	00.00
2	Very low (1.41 to 2.80)	00	00.00
3	Low (2.81 to 4.20)	07	08.75
4	High (4.21 to 5.60)	35	43.75
5	Very high (5.61 to 7.00)	38	47.50
Total		**80**	**100**

Conclusion

The study has identified certain socio-economic profile of farmers. The study reveals that old and middle age group of farmers are more active in farming than young age group. The most of the farmers were married while majority of the farmers are belonged to general and OBC category. Majority of the farmers have 4 to 5 members in their family and few farmers having higher education. Majority of the farmers are form low income group and they are having more than 15 years farming experience. Majority of the farmers having irrigated area up to 5 ha. and most of them were used either open well or bore well for irrigation. Social participation of farmers is negligible. The farmers had differential awareness for sprinkler irrigation system. Most of the farmers having high to very high level of awareness towards sprinkler irrigation system and none of them is unaware about sprinkler irrigation system. The study brought

forward that adoption level of the farmers for sprinkler irrigation system was high to very high.

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