

## Association between Selected Attributes of Drip Owners with the Socio-economic Impact of Drip Irrigation

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### ABSTRACT

The present study was designed to know the association between selected attributes of drip owners and the socio-economic impact of drip irrigation. The study was carried out in three talukas of Sabarkantha district. Five villages were randomly selected from each taluka and 10 drip owners were randomly selected from each village, thus the sample consisted of 150 respondents. Appropriate statistical methods were used for analysing the collected data. It can be concluded from the study that among the selected ten attributes, six attributes viz., education, irrigation potentiality, cropping intensity, economic motivation, attitude and extension contact was positively and significantly and age was negatively and significantly correlated with socio-economic impact of drip irrigation. While, three attributes viz., social participation, area under DIS and annual income had positive but non-significant relationship with socio-economic impact of drip irrigation.

**Keywords:** Association, Socio-economic impact, Drip owners

### INTRODUCTION

Agriculture forms the main base for Indian socio-economic development. However, the agricultural production and productivity is yet to be boosted to meet the need of the population. For increasing the agricultural production, the importance of irrigation is fully realized, but the proper use of water is seldom practiced in our country. The regularized and controlled irrigation increases crop production, reduce water cost, conserves soil, covers more area under irrigation and brings prosperity at home.

Rainfall is irregular and uneven in many parts of the country. Gujarat is also facing this situation. Shortage of water has become one of the main problems in Gujarat for the farmers. Therefore, efficient use of available water has become extremely important,

which can be done through drip irrigation system.

In Gujarat state, Saurashtra, Bhal and North Gujarat regions are considered as dry farming areas. In these regions, the availability of water for irrigation is extremely scarce and irregular. Generally, farmers look for a method of irrigation, which is most efficient with less water, labour, fertilizer and power requirements. Among the irrigation methods the drip irrigation system, is the advanced method of irrigation to overcome the various problems of water losses and other problems such as labour, money and water management. This method is rapidly gaining importance in the area where water is scarce and high value crops are produced.

Drip irrigation is an effective and efficient method of providing water directly to the root zone of plant. Drip irrigation represents one of the fastest expanding technologies in modern

irrigation agriculture. Water is applied at low rate under pressure to keep soil moisture within the desired range for plant growth. This system saves 40 to 70 per cent of irrigation water. A well drip irrigation system also promotes the utilization of fertilizer, pesticides and other water soluble chemicals along with irrigation water. Research studies conducted worldwide have shown that this method leads not only to appreciable water saving, but also achieving high crop yield as compared to surface irrigation methods. This system is adaptable to most of the crops, under most of the soils and particularly suited to soil under condition of water scarcity. Crops like sugarcane, fruits, vegetables, oilseeds and cotton are ideally suited crops for drip irrigation.

The present study was conducted with the following objectives:

1. To study the selected attributes of the drip owners
2. To assess the impact of drip irrigation system on socio-economic status of the drip owners
3. To ascertain the association between selected attributes of drip owners and their socio-economic impact of drip irrigation system

## MATERIALS AND METHODS

The present study was confirmed to "Ex-Post Facto" research design as the independent variables had already operated in the study area. A multistage random sampling technique was used for selection of talukas, villages and respondents. Sabarkantha district was selected purposively. Among the different talukas of Sabarkantha district Idar, Vadali and Himmatnagar talukas were randomly selected. Five villages were selected from each selected taluka on the

basis of highest number of drip owners. Thus, total 15 villages having highest number of drip owners were selected. A list of farmers who installed drip irrigation system on their farm was prepared for each selected village. Ten respondents from each village were selected by using random sampling techniques making a sample of 150 respondents. Socio-economic impact of drip owners was considered as dependent variable in the study. The data were collected with the help of structured interview schedule. The collected data were coded, classified, tabulated and analysed by using the statistical tools such as frequency, per cent, mean, standard deviation and correlation coefficient.

## RESULTS AND DISCUSSION

### A. Selected attributes of drip owners

It was beyond the scope of the present study to include all important characteristics of the respondents. However, some important characteristics of farmers were selected and classified into four groups viz., personal, agro-economic, psychological and communication attributes. The findings of these attributes have been presented in the following Table 1.

The data presented in Table.1 indicates that more than half (54.37 per cent) of the drip owners were from the middle age group. The 87.33 per cent of the drip owners were possessed up to post-graduate level of education whereas, 12.67 per cent of drip owners were illiterate. The 65.33 per cent of the drip owners were member of one organization. Slightly more than two fifth of drip owners (42.00 per cent) had 1.00 to 2.00 ha area under drip irrigation system. Nearly half of the drip owners (47.33 per cent) were having medium level of irrigation potentiality. Whereas, 50.67 per cent of the drip owners

Table: 1. Selected attributes of drip owners (n=150)

| No.                            | Selected attributes of drip owners |                                                     | Frequency    | Percent |
|--------------------------------|------------------------------------|-----------------------------------------------------|--------------|---------|
| (A) Personal Attributes        |                                    |                                                     |              |         |
| 1                              | Age                                | Young age (up to 35 years)                          | 37           | 24.67   |
|                                |                                    | Middle age ( 36 to 50 years)                        | 82           | 54.67   |
|                                |                                    | Old age (above 50 years)                            | 31           | 20.66   |
| 2                              | Education                          | Illiterate                                          | 19           | 12.67   |
|                                |                                    | Can read only                                       | 06           | 04.00   |
|                                |                                    | Can read and write                                  | 28           | 18.66   |
|                                |                                    | Primary                                             | 27           | 18.00   |
|                                |                                    | Middle                                              | 37           | 24.67   |
|                                |                                    | High                                                | 24           | 16.00   |
|                                |                                    | Post-Graduate and above                             | 09           | 06.00   |
| 3                              | Social participation               | No membership                                       | 15           | 10.00   |
|                                |                                    | Member of one organization                          | 98           | 65.33   |
|                                |                                    | Member of more than one organizations               | 28           | 18.67   |
|                                |                                    | Office holders                                      | 09           | 06.00   |
| (B) Agro-economic attributes   |                                    |                                                     |              |         |
| 4                              | Area under DIS                     | Up to 1.00 ha                                       | 19           | 12.67   |
|                                |                                    | 1.01ha to 2.00 ha                                   | 63           | 42.00   |
|                                |                                    | 2.01 ha to 3.00 ha                                  | 39           | 26.00   |
|                                |                                    | Above 3.01 ha                                       | 29           | 19.33   |
| 5                              | Irrigation potentiality            | Low (Up to 49.40 score)                             | 43           | 28.67   |
|                                |                                    | Medium (Between 49.40-90.00 score)                  | 71           | 47.33   |
|                                |                                    | High (Above 90.00 score)                            | 36           | 24.00   |
|                                |                                    | Mean=69.70                                          | S.D. = 20.30 |         |
| 6                              | Cropping intensity                 | Low (Up to 208.35 score)                            | 38           | 25.33   |
|                                |                                    | Medium (Between 208.35-297.65 score)                | 76           | 50.67   |
|                                |                                    | High (Above 297.65 score)                           | 36           | 24.00   |
|                                |                                    | Mean=253                                            | S.D. = 44.65 |         |
| 7                              | Annual income                      | Low (Up to ₹160039)                                 | 16           | 10.67   |
|                                |                                    | Medium (Between ₹160039 - ₹609269)                  | 127          | 84.66   |
|                                |                                    | High (Above ₹ 609269)                               | 07           | 04.67   |
|                                |                                    | Mean=384654                                         | S.D. =224615 |         |
| (C) Psychological attributes   |                                    |                                                     |              |         |
| 8                              | Economic motivation                | Low (Up to 23.50 score)                             | 28           | 18.67   |
|                                |                                    | Medium (Between 23.50-29.18 score)                  | 82           | 54.67   |
|                                |                                    | High (Above 29.18 score)                            | 40           | 26.66   |
|                                |                                    | Mean=26.34                                          | S.D. = 2.84  |         |
| 9                              | Attitude towards DIS               | Less favourable (Up to 105.40 score)                | 42           | 28.00   |
|                                |                                    | Moderately favourable (Between 105.40-140.20 score) | 87           | 58.00   |
|                                |                                    | Highly favourable (Above 140.20 score)              | 21           | 14.00   |
|                                |                                    | Mean=122.80                                         | S.D.=17.40   |         |
| (D) Communicational attributes |                                    |                                                     |              |         |
| 10                             | Extension contact                  | Low (Up to 1.50 score)                              | 21           | 14.00   |
|                                |                                    | Medium (Between 1.50-3.60 score)                    | 91           | 60.67   |
|                                |                                    | High (Above 3.60 score)                             | 38           | 25.33   |
|                                |                                    | Mean=2.55                                           | S.D.=1.05    |         |

possess medium level of cropping intensity and 84.66 per cent of the drip owners had medium level of annual income. More than half of the drip owners (54.67 per cent) possess medium to high level of economic motivation. While, 58.00 per cent had moderately favourable attitude towards drip irrigation system. Slightly more than three fifth of the drip owners (60.67 per cent) had medium level of extension contact.

#### **B. Impact of drip irrigation system on socio-economic status of the drip owners**

Impact is the major component in this study which is the resultant changes occurred

Table 2: Distribution of drip owners according to their socio-economic impact of DIS (n = 150)

| Sr. No.      | Impact of DIS                      | Frequency   | Per cent |
|--------------|------------------------------------|-------------|----------|
| 1            | Low (Up to 19.80 score)            | 25          | 16.67    |
| 2            | Medium (Between 19.80-25.40 score) | 94          | 62.67    |
| 3            | High (Above 25.40 score)           | 31          | 20.66    |
| Total :      |                                    | 150         | 100.00   |
| Mean = 22.60 |                                    | S.D. = 2.80 |          |

The data in Table 2 indicated that slightly more than three fifth (62.67 per cent) of the drip owners were having medium level of socio-economic impact, followed by 20.66 and 16.67 per cent of them had high and low level of socio-economic impact, respectively.

#### **C. Association between selected attributes of drip owners and the socio-economic impact of drip irrigation system**

The correlation coefficient 'r' was worked out to know the association between independent and dependent variables. The correlation coefficient was calculated for socio-economic impact of drip irrigation with ten independent variables which were grouped into (i) personal attributes, (ii) agro-economic attributes, (iii) psychological and (iv) communicational attribute. The results in this regards are discussed under following sub-titles and presented in Table 3.

among the drip owners due to adoption of drip irrigation system. It is assessment of changes in terms of socio-economic aspects of drip owners. The resultant changes that occurred after adoption of drip irrigation system viz., change in self-sufficiency, change in social status, saving in water, fertilizer cost, plant protection cost, weed control expenses, saving in labour utilisation, energy cost, increase in crop production, improving quality of produce and early maturity of crop were considered as major aspect of socio-economic impact. The information in this regard was collected and classified in to three levels viz., low, medium and high. The data are presented in Table 2.

The education, irrigation potentiality, cropping intensity, economic motivation, attitude and extension contact were positively and significantly and age was negatively and significantly correlated with socio-economic impact of drip irrigation system. Social participation, area under DIS and annual income had positive and non-significant relationship with socio-economic impact of drip irrigation system.

### **CONCLUSION**

The regularized and controlled irrigation increases crop production, reduce water cost, conserves soil, covers more area under irrigation and brings prosperity at home. It can be concluded from the study that 62.67 per cent of the drip owners had medium level of socio-economic impact while 20.66 per cent had high level of socio-economic impact.

Table 3 : Association between selected attributes of drip owners and the socio-economic impact of DIS (n=150)

| Sr. No. | Independent variables       | Correlation coefficient ('r' value) |
|---------|-----------------------------|-------------------------------------|
| [I]     | Personal variables :        |                                     |
|         | (1) Age                     | -0.389**                            |
|         | (2) Education               | 0.554**                             |
|         | (3) Social participation    | 0.089NS                             |
| [II]    | Agro-economic variables :   |                                     |
|         | (1) Area under DIS          | 0.112NS                             |
|         | (2) Irrigation potentiality | 0.279**                             |
|         | (3) Cropping intensity      | 0.231**                             |
|         | (4) Annual income           | 0.138NS                             |
| [III]   | Psychological variables :   |                                     |
|         | (1) Economic motivation     | 0.412**                             |
|         | (2) Attitude towards DIS    | 0.458**                             |
| [IV]    | Communication variables :   |                                     |
|         | (1) Extension contact       | 0.468**                             |

\*\* = Significant at 1% level; \* = Significant at 5% level; NS = Not significant

While in case of association, education, irrigation potentiality, cropping intensity, economic motivation, attitude and extension contact were positively and significantly correlated with socio-economic impact of drip irrigation system. On the other hand age was negatively and significantly correlated with socio-economic impact of drip irrigation system where as social participation, area under DIS and annual income had positive and non-significant relationship with socio-economic impact of drip irrigation system.

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