Regression Analysis of Knowledge Level and Socio Economic Impact of Drip Irrigation System with the Selected Characteristics of Drip Owners

Mahammad Shafi Rupanagudi Shaik [*1], Swati Khandave [2] and Nikitaben Thakor [3]

Sardarkrushinagar Dantiwada Agricultural University, 385506 (Gujarat)

ABSTRACT

Drip method of irrigation has immense potential to enhance the productivity of several crops and socially beneficial for improving the profitability by reducing the cost of cultivation. Thus, this study aimed to investigate the relationship between socio economic impact and knowledge level with profile of drip farmers. A total of 150 respondents were selected by using randomly sampling technique. In the regression analysis 46.50 per cent and 16.70 per cent of the socio economic impact of drip irrigation and knowledge level of drip irrigation were influenced by the profile of drip owners. Whereas education, attitude and extension contact variables predicts the socio economic impact of drip irrigation system and knowledge level on drip irrigation system was predicted by the age, education and social participation.

Key Words: Analysis, Characteristics, Drip Irrigation System, Knowledge level, Socio-Economic, Impact.

INTRODUCTION

In India, demand of water for all the major sectors is growing spontaneously and demand management mechanism becomes the major key strategy to manage scarce resources of water. Water is going to be increasingly scarce and thereby limits the agricultural development in almost all the corner of entire world. Efficient development with proper management of the scarce water resources is the key determinants for achieving food security not only for India, but for the entire world. Drip method of irrigation has immense potential to enhance the productivity of several crops with a reduction in the cost of cultivation, the reason is drip system of irrigation increased benefits through well sponsored central as well as state subsidy schemes. The drip irrigation in agriculture is profitable and socially beneficial to the farmers as it reduces the cost of water extraction by adoption of solar energy. The consequent effect of drip irrigation system are reflected in terms of generating more income from the agriculture by saving of water, labour, fertilizers and plant protection measures. Several socio economic factors are responsible for creating impact of drip irrigation technology *viz.*, knowledge of drip irrigation system, attitude, social participation, income, area under drip, crops grown *etc.* The regression analysis was done to study the influence of the independent variables on dependent variable.

MATERIALS AND METHODS

The study was conducted in purposively selected Aravalli district of Gujarat state by *Ex-post facto* research design. The district has six talukas, out of these, Bhiloda, Dhansura, and Bayad districts were selected randomly. From the selected talukas, five villages were selected on the basis of more number of farmers those adopted drip technology. Thus, total 15 villages having more number of drip farmers were selected. A list of farmers who installed drip irrigation system on

*Corresponding Author's Email: shafiagri23@gmail.com

[1&3]Ph. D. Scholar, Dept of Agri. Extn. and Communication, B. A. College of Agriculture, A.A.U., Anand, Gujarat – 388001

[2]Associate professor, Collage of Agriculture, Pune, Maharashtra.

their farm was prepared from each selected village. Ten respondents from each village were selected by using random sampling techniques making a sample of 150. The data were collected personally by interviewing, the selected drip owners with the help of carefully constructed structured and pre-tested interview schedule. Regression coefficient was used to find out relationship between the selected attributes of drip farmers with knowledge and socio economic impact of drip technology with the help of following formula.

$$Y = a+bX+c$$

Whereas Y represents the observed values of the dependent variable, and X represents the values of the independent variable. While **a** is slope of regression line and **c** is constant.

RESULTS AND DISCUSSION

It was evident (Table 1) that R^2 value was 0.167 revealed that there was around 16.70 per cent influence on knowledge level of farmers about drip irrigation. The F values found to be significant at 0.01 level of significance. So, it can be interpreted that knowledge level was significantly influenced by the profile of selected respondents in the Aravali District. Similar results were found by Verma (2017).

Data (Table 2) revealed that characteristics like age, education and social participation were better able to predict knowledge level of drip

Table 1. Regression analysis between Knowledge level and Profile of Drip farmers.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F value	Significance
Profile of drip farmers	.472[a]	.223	.167	4.62911	3.995	0.000**

**Significant at 0.01 per cent level

Table 2. Regression analysis with the characteristics of drip farmers and knowledge level .

Variable	Predictor Variable	Regression Coefficient	t- Ratio	Level of Significance
Knowledge level	Age	.498	4.658	.000**
	Education	.438	4.366	.000**
	Social participation	.166	2.201	.029*
	Area under DIS	-.123	-.517	.606
	Irrigation potentiality	.044	.381	.704
	Cropping intensity	-.027	-.225	.823
	Annual income	.121	.511	.610
	Economic motivation	.017	.193	.847
	Attitude	.064	.603	.548
	Extension contact	.014	.142	.887

**Significant at 0.01 per cent level

*Significant at 0.05 per cent level

Regression Analysis of Knowledge Level

Table 3. Regression analysis between Socio economic impact and Profile of Drip farmers.

Parameter	R	R Square	Adjusted R Square	Std. Error of the Estimate	F value	Significance
Profile of drip farmers	.682[a]	.465	.427	2.42512	12.095	.000**

** Significant at 0.01 per cent level

farmers (The results of this study were in line with Babu *et al* (2017). The probable reason might be age, education and social participation had shown highly significant relationship with knowledge because majority of the drip farmers were middle aged group and were more interested to get more information on drip system to increase their income level through production. Whereas the high education status of drip farmers may be influenced to get more information on drip irrigation system increased their knowledge and participation in any meetings conducted by any organisation on drip irrigation may influence the drip farmers to get more knowledge on drip irrigation system.

The result of regression analysis is depicted in Table 3. Results stated that the R^2 value was 0.465 which means that there was an around 46.50 per cent influence on socio economic impact of drip irrigation system. The F values found to be significant at 0.01 level of significance. So, it can be interpreted that socio economic impact was significantly influenced by the profile of farmers in the Aravali District. Similar results were found by Vinayakumar *et al* (2013)

It was evident (Table 4) that the characteristics *viz.,* education, attitude and extension contact were better able to predict socio economic impact. The results of this study were in line with the results of the study conducted by Jitarwal and Sharam, (2007) and Kumar and Jitarwal (2012). The probable reason might be that education, attitude and extension contact having highly significance with

Table 4. Regression Analysis with the characteristics of drip farmers and socio economic impact.

Variable	Predictor Variable	Regression Coefficient	"t" Ratio	Level Of Significance
Socio economic impact	Age	.047	.534	.594
	Education	.354	4.259	.000**
	Social participation	.070	1.114	.267
	Area under DIS	.181	.914	.362
	Irrigation potentiality	.103	1.071	.286
	Cropping intensity	.025	.254	.800
	Annual income	-.130	-.662	.509
	Economic motivation	.143	1.965	.051
	Attitude	.212	2.390	.018*
	Extension contact	.172	2.035	.044*

**Significant at 0.01 per cent level

*Significant at 0.05 per cent level

socio economic impact are due to the drip farmers who adopted drip irrigation system having high education status may influence the farmers towards the adoption of new technologies i.e., drip irrigation system. Moreover change in attitude might be due to acute shortage of water, financial incentives under schemes may be motivated the farmers towards drip irrigation and due to higher education status farmers may be contacted to extension agents for any information regarding the Drip irrigation system

CONCLUSION

The aim of the study was to examine the relationship between socio economic impact and knowledge about drip irrigation with the personal characteristics of drip farmers. The overall results showed that the drip farmers achieved high socio economic status due to higher education level, attitude and extension contact of drip farmers exclusively. These characteristics influenced due to education level, due to shortage of water, to promote the drip irrigation system by government to increase irrigation efficiency and attending seminars and trainings conducted by various agencies to get more information may influenced to increase the socio economic status. Knowledge

on drip irrigation system showed high relationship with age education and social participation. The reason may be middle aged farmers may have more interest to get more knowledge on drip irrigation system. Whereas membership in drip company may influenced them to get more information on drip irrigation system.

REFERENCES

Babu T M, Lakshmi T, Sathya Gopal P V and Prasad S V (2017). Extent of knowledge and its influence various variables on micro irrigation system (MIS) among APMIP beneficiaries. *Bull Env Pharmaco Life Sci* **6** (1): 452-456

Jitarwal R C, and Sharam N K (2007). Impact of drip irrigation technology among farmers in Jaipur region of Rajasthan. *Indian Res J of Ext Edu* **7** (2&3):88-89.

Kumar M and Jitarwal R C (2012). Review of factors affecting the adoption of drip irrigation technology. *J Krishi Vigyan* **1**(1):69-71.

Vinayakumar H M, Mahatabali K M, Sujaykumar S, Ramanna K N and Gowda G V (2013). Personal and socio psychological characteristics of the beneficiary farmers of community based tank management project and their relationship with socio-economic status. *Int J Adv Bio Res* **3**(2):184-187.

Verma H L, and Sharma S K (2017). Factors Associated with Adoption of Drip Irrigation System by the Farmers in Bikaner District of Rajasthan. *Asian J Agri Ext Eco & Socio* **18**(1): 1-8.