

Study of Adoption Behaviour of Drip Irrigation System on Chilli Crop in Barwani District of M.P. India

Mr.Ravi Bhuriya, **Dr. Sandhya Choudhary, Dr. V.K. Swarnakar**

**M.Sc. Extension Education Final Year Student 2015*

*** Associate Professor Extension Education, College of Agriculture, Indore*

**** Professor & Head Extension Education, College of Agriculture, Indore*

Abstract: Drip irrigation system is extremely profitable as it saves 40-70 percent water as compared to surface irrigation method i.e. flood, sprinkler, furrow, as the drip method reduces labour cost and protects the plants from diseases by minimizing humidity in atmosphere. Besides, soluble fertilizers can also be applied with irrigation water (Anonymous, 2006). Thus, drip irrigation has become a means of hi-tech Agriculture/Horticulture and precision farming. The efficiency of water is enhanced by 90 -95 percent under drip irrigation system. Bahuguna (1996) stated that by drip system of irrigation, 95 percent of the irrigation water can be used efficiently and the production may be increased by 30-50 percent. The above facts show the importance of drip irrigation system. So far as, in regards to its adoption it is found to be low due to its higher cost with respect to this a study was conducted to analyse the adoption behaviour of drip irrigation system in Barwani district with sample of 120 farmers. The study found that higher number (68.34 per cent) of the respondents had medium adoption level of drip irrigation system in study area followed by high (18.33 per cent) and low (13.33 per cent) adoption. It was observed that, cent percentage of respondents expressed the benefit like cultivation of chilli by using DIS.

I. Introduction

Water is the most precious natural resource; it is essential for agricultural development and all organic life on the earth. Intensive agriculture and an ever-growing human population are fast depleting this already scarce natural resource. Now a days this is challenging situation and the need of time is to conserve 'water' and ensure its 'efficient use'.

Drip system is relatively a new concept of irrigation, which has developed over the last decade throughout the world. In 1964, Symcha Blass an Israeli engineer developed the first potential drip irrigation system (DIS). Today India ranks 7th in terms of coverage of area under drip irrigation with an irrigated area of 2, 87,500 hectares, with this USA, Spain, Australia, South Africa, Israel and Italy are the most popularly known as this system for adoption. (Anonymous, 2006-07).

"Drip irrigation is basically precise and slow application of water in the form of discrete continuous drops, sprayed through mechanical devices, called emitters into the root zone of the plant". Singh (1995) reported that by the drip system of irrigation, water reaches the roots drop by drop and hence, it is an economic method of irrigation in all seasons.

Objective

1. To measure the adoption behavior and economic benefits by adopting drip irrigation system.

II. Review Of Literature

Joshi (2004) found positive and significant correlation between education of the farmers and their adoption level. He also reported positive and significant correlation between scientific orientation and adoption level.

Gupta et al. (2010) revealed that there was significant improvement in yield, quality, water and fertilizer use efficiencies of capsicum under drip irrigation and fertigation. However, the combined effect of drip irrigation and fertigation was found superior than their individual effects. The treatment combination of 80 per cent ET (Evapo-transpiration) through drip and 80 per cent recommended NPK through fertigation registered maximum fruit yield (366.48 q/ha). The highest water use efficiency (29.40 q/ha-cm) was observed with the treatment combination of 60 per cent ET through drip+80 per cent recommended NPK through fertigation.

Kumar (2012) found that drip method of irrigation is found to have a significant impact on resources saving, cost of cultivation, yield of crops and farm profitability. The adoption of drip irrigation is significantly influenced by experience, farm size, proportion of wider spaced crops and participation in non-farm income activities. The policies should focus on promotion of drip irrigation in those regions where scarcity of water and labour is severe and where shift towards wider-spaced crops is taking place.

III. Material & Methods

Barwani Block of Barwani district was selected purposively for the present study because the majority of the farmers used Drip Irrigation System. For this study, the random sampling technique was used for selection of villages and proportionate random sampling for selection of respondents. 10 villages were selected randomly out of the list of villages in the block using drip irrigation system. Master list of farmers using drip irrigation system in the selected villages was prepared and a sample of 120 farmers were selected using proportionate sampling technique.

IV. Result And Discussion

Adoption level of drip irrigation system by the respondents

Table: Distribution of respondents according to their level of adoption of drip irrigation system

S.No.	Category	No. of respondents	Percentage
1.	Low level of adoption	16	13.33
2.	Medium level of adoption	82	68.34
3.	High level of adoption	22	18.33
	Total	120	100

Drip irrigation system is water saving device and constantly gaining momentum and contributing significantly towards the upliftment of agriculture with limited irrigation water availability. Recognizing the importance of drip irrigation system in farm economy and their contribution to protect from wastage of water, it is necessary to motivate the respondents to adopt drip irrigation system as well as maximum possibilities.

Due to economic and safety point of view, the great emphasis is being paid by both the scientists and extension workers to boost up agriculture production with the use of irrigation particularly with the use of drip irrigation system because there is scarcity of irrigation water. The gain from drip irrigation system is possible only when the respondents adopt this technology as recommended as such. The adoption level of drip irrigation system by selected respondents is presented in Table.

The data presented in Table indicates that majority of the respondents 68.34 per cent had medium level of adoption regarding drip irrigation system followed by 18.33 per cent had high level of adoption and 13.33 per cent had low level.

Thus, it may be concluded that higher number of the respondents had medium adoption level of drip irrigation system in study area followed by high and low.

The Table reveals that out of 20 respondents belong to low awareness, the maximum number of respondents 40.00 per cent was found to be as medium adoption group followed by 35.00 per cent respondents found to high adoption group and 25.00 per cent respondents found to low adoption group of drip irrigation system.

Out of total 35 respondents belong to medium awareness, the maximum number 54.28 per cent respondents was found to be as medium adoption group followed by 28.57 per cent respondents found to high adoption group and 17.14 per cent respondents found to low adoption group.

Again out of total 65 respondents belongs to high awareness, maximum number 84.61 per cent respondents was found to be as medium adoption group followed by 07.69 per cent respondents found to high and low adoption group (as equal number). The calculated chi-square value 11.8* at 5 per cent level with 4 degree of freedom was found to be significant. This leads to the rejection of null hypothesis No.11. Hence, it may be seen that awareness had an influence on the extent of adoption. Again it can be concluded that awareness is very important to change in the system of working.

Table: Economic benefits by adopting drip irrigation system

S.N	Economic benefits	Frequency (N=120)	Percentage	Rank
1	Cultivation of chilli by using DIS is a good source of getting more income.	120	100.00	I
2	There is improvement in socio economic level of farmers by large	110	91.66	II
	There is necessity of changing traditional methods of irrigation of chilli for improving living standard of farmers.	96	80.00	IV
4	Instead of using other methods of irrigation DIS method gives more income.	102	85.00	III
5	Traditional irrigation method is based on economic benefits.	29	24.17	VIII
6	Commercialization of agriculture can be increases only through economic gain.	84	70.00	V
7	A successful farmer should focus only in beneficial farming.	62	51.66	VII
8	There is increase in economic benefits through better methods and rules of export of chilli.	79	65.83	VI

The benefits experienced by respondents studied under drip irrigation system related benefits have been depicted in this result. It was observed that, cent percentage of respondents expressed the benefit like cultivation of chilli by using DIS is a good source of getting more income (Rank I), 91.66 percent of respondents expressed the benefit improvement in socio economic level of farmers by large production of chilli (Rank II), Instead of using other methods of irrigation DIS method gives more income (85.00 per cent and Rank III), there is necessity of changing traditional methods of irrigation of chilli for improving living standard of farmers (80.00 per cent and Rank IV), Commercialization of agriculture can be increases only through economic gain (70.00 per cent and Rank V), there is increase in economic benefits through better methods and rules of export of chilli (65.83 per cent and Rank VI), successful farmer should focus only in beneficial farming (51.66 per cent and Rank VII), Traditional irrigation method is based on economic benefits (24.17 per cent and Rank VIII).

The "adoption behavior" is the mental process through which an individual passes from first hearing of an innovation to its final adoption, while adoption is a decision to continue the full use of an innovation. Generally, the farmers do not adopt technology practices fully. Medium level of adoption is generally found by farmers. As a result, the gap always appears between the recommended technology and their use at farmer's field, hence; need is required to enhance the level of adoption of drip irrigation system by the farmers in study area. It revealed from the present study that higher number of the respondents (68.34 per cent) had medium adoption level of drip irrigation system in study area. Joshi (2004) also reported positive and significant correlation between education of the farmers and their adoption level.

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