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Impact of Drip Irrigation System Among the Chilli Growers of Madhya Pradesh

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ABSTRACT

Drip irrigation system is extremely profitable as it saves 40-70 percent water and enhanced the water use efficiency by 90-95 percent as compared to surface irrigation method i.e. flood, sprinkler, furrow. It also reduces labour cost, protects the plants from diseases by minimizing humidity in atmosphere and ultimately increases the productivity. Beside this, water soluble fertilizers can also be applied through irrigation water. Thus, drip irrigation has become a means of Hi-tech Agriculture/Horticulture and precision farming. Random sample of 12 chilli growers using drip irrigation system was taken from 10 villages of Barwani district of Madhya Pradesh for this study. Thus, total number of 120 chilli growers using drip irrigation system constituted the sample for the purpose of the study. The data were collected through a well-structured and pre-tested interview schedule.

This study reveals that 68.34 percent respondents had medium level of adoption regarding drip irrigation system, whereas, 100% respondents expressed the benefits of drip irrigation system as it increases the production and productivity of chilli and getting more income by the farmers. 91.66% respondents expressed the benefit of drip irrigation system for improving the socio economic status of the farmers.

Key words: *Drip Irrigation, Sprinkler, Precision, Hi-tech Horticulture*

INTRODUCTION

Madhya Pradesh is one of the state in India where rainfed farming accounts the maximum cultivated area (9.31 million ha). The rainfed area needs proper and regular management of irrigation water particularly to save as wastage from conventional type of irrigation. On a sustainable basis of agricultural production water saving device is a paramount important through adoption of drip irrigation system for better cropping patterns and increase the sources of income as discussed by Gupta *et al*[2].

The Barwani district is known as for their peculiar character of black soil. The main crop of this area is cotton and chilli. The annual average rainfall rate of last two years is 721.4 mm (Agricultural Statistics, Bhopal, M.P.).

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Hence, water scarcity and sources of irrigation are not sufficient which caused the problems for cultivation of these crops among the farmers. Therefore, in the present study, it was necessary to investigate the adoption level of drip irrigation system by the chilli growers. The specific objectives of the study are as follows:

1. To know adoption behavior of chilli growers towards drip irrigation system.
2. To measure the economic benefits by adopting drip irrigation system.
3. To find out the problems and prospects of drip irrigation system in view of chilli growers.

MATERIAL AND METHODS

Barwani district was selected purposively for the present study because the majority of the chilli growers were being used drip irrigation system. A random sample of 12 chilli growers using drip irrigation system was taken from 10 villages of Barwani district. Thus, total number of 120 chilli growers using drip irrigation system constituted the sample for the purpose of the study. The data were collected through a well-structured and pre-tested interview schedule. After tabulation, percentage, mean, standard deviation and chi-square test were determined.

RESULTS AND DISCUSSION

Adoption level of drip irrigation system by the respondents

The data presented in table 1 indicated that most of the respondents (68.34 percent) had medium level of adoption regarding drip irrigation system followed by 18.33 percent had high level of adoption and 13.33 percent 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. Similar findings were also revealed by Dongardive[1] and Singh and Bhimawat[6].

Table 1: 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**

Economic benefits by adopting drip irrigation system.

The benefits experienced by drip system users were studied and depicted in Table 2.

Table 2: Economic benefits by adopting drip irrigation system

S. No.	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	Improvement in socio economic level of farmers by large production of chilli	110	91.66	II
3	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 through drip irrigation system have been discussed in this paragraph. It was observed that, 100% respondents expressed the benefit like cultivation of chilli by using DIS is a good source of getting more income (Rank I), 91.66% of respondents expressed the 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% and Rank III), there is necessity of changing traditional methods of irrigation of chilli for improving living standard of farmers (80.00% and Rank IV), Commercialization of agriculture can be increases only through economic gain (70.00% and Rank V), there is increase in economic benefits through better methods and rules of export of chilli (65.83% and Rank VI), successful farmer should focus only in beneficial farming (51.66% and Rank VII), Traditional irrigation method is based on economic benefits (24.17% and Rank VIII). Similar results were also obtained by Jiterwal[3].

Problems of drip irrigation system in view of chilli growers

The data regarding adoption level of drip irrigation system was found to medium level followed by high and low respectively. The adoption at medium and low level was due to many problems confronted by respondents. The main problems are presented in table 3.

Table 3: Problems of drip irrigation system in view of chilli growers

S. No.	Problems	Frequency (N=120)	Percentage	Rank
1.	Hard management practices in drip irrigation system	117	97.50	I
2.	Lack of credit facilities for drip irrigation system	112	93.33	II
3.	Risk in adoption of drip irrigation system	110	91.66	III
4.	Preferring adoption of traditional irrigation system	99	82.50	IV
5.	Lack of capital for adoption of drip irrigation system	98	81.66	V
6.	Drip irrigation system be costly	92	76.66	VI
7.	Lack of technical knowledge about drip irrigation system	85	70.83	VII
8.	Lack of training facilities regarding drip irrigation system	75	62.50	VIII
9.	Lack of information about drip irrigation system	60	50.00	IX
10.	Lack of proper knowledge for adoption of drip irrigation system	50	41.66	X
11.	Lack of proper facilities regarding drip irrigation system	44	36.67	XI

The problems analysis was reported on the basis of opinion survey of the sample respondents. Thus, the generalizations of result are the feedback through respondents adopting the drip irrigation system in study area. The above table revealed the major constraints as perceived by the respondents are as per the frequency level of respondents and ranked accordingly the views at the time of collecting data were hard management practices in drip irrigation system (I^{st} ranked) viewed by 97.50 percent of respondents followed by lack of credit facilities for drip irrigation system (II^{nd} ranked) viewed by 93.33 percent, Risk in adoption of drip irrigation system (III^{rd} ranked) viewed by 91.66 percent, preferring adoption of traditional irrigation system (IV^{th} ranked) viewed by 82.50 percent, lack of capital for adoption of drip irrigation system (V^{th} ranked) viewed by 81.66 percent, drip irrigation system be costly (VI^{th} ranked) viewed by 76.66 percent, Lack of technical knowledge about drip irrigation system (VII^{th} ranked) viewed by 70.83 percent, Lack of training facilities regarding drip irrigation system ($VIII^{th}$ ranked) viewed by 62.50 percent, Lack of information about drip irrigation system (IX^{th} ranked) viewed by 50.00 percent, Lack of proper knowledge for adoption of drip irrigation system (X^{th} ranked) viewed by 41.66, Lack of proper facilities regarding drip irrigation system (XI^{th} ranked) viewed by 36.67 percent of the total respondents respectively. Singh and Pachori[5] (2005) also found similar results.

Suggestions regarding removal of problems

For removing of these problems expressed by the respondents following suggestion were made. The majority of the respondents suggested that Drip Irrigation System should be provided at time (80.83% and ranked I)

followed by easily providing the loan at low interest level and time (75.00% and ranked II), Drip Irrigation System should be provided at low cost (72.50% and ranked III), the extension workers should be provided proper guidance at time (70.83% and ranked IV), extension facilities should be available on demonstration and visiting basis (69.16% and ranked V), there should be proper motivation for installation of Drip Irrigation System (54.16% and ranked VI), credit repayment should be easy (50.00% and ranked VII), there should be organized training programme and demonstration regarding technical knowledge of Drip Irrigation System (37.50% and ranked VIII) and there should be appointed special person for regular checking and management of Drip Irrigation System (29.16% and ranked IX) were the main suggestions as given by the respondents for solving the problems. Similar finding was reported by Kalsariya *et al*[4].

Table 4: Suggestions confronted by the respondents for solving the problems

S.No.	Suggestions	Frequency (N=120)	Percentage	Rank
1.	DIS should be provided at time	97	80.83	I
2.	Easily providing the loan at low interest level and time	91	75.00	II
3.	DIS should be provided at low cost	87	72.50	III
4.	The extension workers should be provided proper guidance to the maintenance.	85	70.83	IV
5.	Demonstration and visiting of experts.	83	69.16	V
6.	There should be proper motivation for installation of DIS	65	54.16	VI
7.	Credit repayment should be easy.	60	50.00	VII
8.	There should be organized training programme and demonstration regarding technical knowledge of DIS.	45	37.50	VIII
9.	There should be appointed person for regular checking and management of DIS	35	29.16	IX

CONCLUSION

It can be concluded that most of the respondents 68.34 percent had medium level of adoption regarding drip irrigation system followed by 18.33 percent had high level of adoption and 13.33 percent had low level respectively. 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. Regarding benefits experienced by respondents, it was observed that, 100% respondents expressed the benefit like cultivation of chilli by using drip irrigation system is a good source of getting more income, 91.66 percent of respondents expressed the benefit improvement in socio economic level of farmers by large production of chilli.

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