

**RESEARCH ARTICLE :**

Knowledge level of drip irrigation farmers about drip irrigation technology

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ARTICLE CHRONICLE :**Received :**

21.03.2020;

Revised:

23.09.2020;

Accepted :

10.10.2020

SUMMARY : The present study was carried out during 2013 in the Durg district of Chhattisgarh state. This study was conducted in randomly selected 8 villages of two purposively selected blocks *i.e.* Durg and Dhamdha located in Durg district. The aim of this study was to assess the risk orientation and level of knowledge of drip irrigation farmers about drip irrigation technology. A total of 128 respondents including 64 drip irrigation farmers and 64 non-drip irrigation farmers were selected randomly. The data collection was done by the use of interview schedule through personal interview. Data were analyzed with help of suitable statistical tools. The findings revealed that majority of the respondents had high risk bearing capability and having high level of knowledge about equipments fitted in DIS. Majority of the DIF were having high level of knowledge regarding drip irrigation technology.

KEY WORDS :

Drip irrigation,
Knowledge level, Risk
bearing capability,
Tomato growers

How to cite this article : Sahu, Sushma, Surywanshi, D.K., Khan, M.A. and Sahu, Bhedu Prasad (2020). Knowledge level of drip irrigation farmers about drip irrigation technology. *Agric. Update*, 15(4): 311-314; DOI : 10.15740/HAS/AU/15.4/311-314. Copyright@ 2020: Hind Agri-Horticultural Society.

BACKGROUND AND OBJECTIVES

The concept of irrigation is as old as the human civilization; however, there has been enhanced efficiency in the irrigation patterns over a period of time. Adoption of improved water management practices is an important need of the day. India's crop production suffers not only from drought but also from indiscriminate use of irrigation water. There is wastage of huge quantity of water with the present methods of irrigation which were in vogue. It is becoming increasingly clear that with the advent of high yielding varieties the next major advance in our agricultural production is expected to come through efficient water management practices like

adoption of water saving methods such as micro irrigation.

Micro irrigation has revolutionized agriculture in many countries of the world. The essential characteristics of this system are frequent, slow and low volume application of water directly to the plant root zone or on the land surface beneath the plant. It is based on the fundamental concept of irrigation only at the root zone of the crop and maintaining the soil moisture near optimum level.

Drip technology also improves irrigation efficiency by reducing evaporation from the soil surface, reducing or eliminating runoff and deep percolation and eliminating the need to drastically over-irrigate some parts of the field to compensate for uneven water application

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(Schwankl, 1997). The application or injection of fertilizers and other chemicals can also be optimized through the use of drip irrigation, weed growth can be reduced and salinity problems can be mediated. Relative to highly pressurized sprinkler irrigation systems, drip irrigation may require less energy. Drip irrigation systems also are very adaptable to difficult soil and terrain conditions.

Keeping in view of the above facts in to consideration, the present study was undertaken to find out the risk bearing capability and level of knowledge about drip irrigation technology.

RESOURCES AND METHODS

This study was conducted in Durg district of Chhattisgarh, during the year 2013. The Chhattisgarh state consists of 27 districts, out of which Durg district was selected because the farmers of this district adopted highest drip irrigation technology. From this district only two blocks *i.e.*, Durg and Dhamdha were selected purposively. From each selected block, 4 villages (Total $4 \times 2 = 8$) will be selected on the basis of maximum availability of drip irrigation technology adopters in the villages. From each selected village, 8 tomato growers having drip irrigation system were selected randomly and similar number of tomato growers not having drip irrigation system was selected randomly from the same village. In this way a total of 164 farmers were considered as respondent. Out of which 64 was drip irrigation holders and remaining 64 was treated as control group without having drip irrigation. In this investigation farmers having drip irrigation were enumerated as DIF and those respondents who have no drip irrigation facility were considered as non-DIF were selected as respondents for the present study. Respondents were interviewed through personal interview. Prior to interview, respondents were taken in to confidence by revealing the actual purpose of the study and full care was taken in to consideration to develop good rapport with them. For the data collection well designed and pre-tested interview scheduled were used. Collected data were analyzed by the help of various statistical tools *i.e.*

frequency, percentage, mean and standard deviation, etc.

OBSERVATIONS AND ANALYSIS

The findings of the present study as well as relevant discussion have been summerized under following heads:

Risk orientation :

The findings about risk bearing capability of the respondents are compiled in Table 1. The table indicate that majority of the DIF (89.04%) had high risk bearing capability. About six per cent of the DIF had low level of risk bearing capability and only 4.68 per cent were taking the medium risk. Whereas, the 50.00 per cent of the non-DIF had high risk bearing capability, followed by 31.25 per cent had medium level of risk bearing and 18.75 per cent were having the low risk bearing capability.

Level of knowledge about drip irrigation technolog:

The findings on extent of knowledge regarding equipments fitted in drip irrigation system (DIS), filter use in DIS, fertilizers application equipment in DIS, types of lateral used in DIS, types and capacity drippers used in DIS, operating pressure of DIS, method of fertilizer application, types of fertilizers used for fertigation through DIS, the irrigation interval through DIS and flushing interval of DIS are presented in Table 2. It revealed that majority (90.62%) of the DIF had high level of knowledge about equipments fitted in DIS, followed by types of lateral used in DIS (82.81%), method of fertilizer application (82.81%), fertilizers application equipment in DIS (73.43%), type of fertilizers used for fertigation through DIS (45.32%), filter use in DIS (43.75%), operating pressure of DIS (26.56%), types and capacity drippers used in DIS (25.00%), flushing interval of DIS (21.87%) and (9.37%) high level of knowledge about irrigation interval through DIS were the important component of knowledge being assessed amongst the DIF respondents. Whereas, 12.5 per cent of the non-DIF had high level of knowledge about equipments fitted in DIS, followed by only 1.56 per cent of the non-DIF had high level of knowledge about method of fertilizer

Table 1: Distribution of respondents according to their risk bearing capability

Risk orientation	DIF (n=64)		Non-DIF (n=64)	
	Frequency	Percentage	Frequency	Percentage
Low (upto10)	4	6.25	12	18.75
Medium (10.1 to 20)	3	4.68	20	31.25
High (20.1 to 30)	57	89.04	32	50.00

application in drip irrigation technology. None of the non-DIF respondents had high level of knowledge about other components of DIS.

While, the majority (90.63%) of the DIF had medium level of knowledge about irrigation interval through DIS, followed by flushing interval of DIS (78.13%). Types and capacity drippers used in DIS (68.75%), operating pressure of DIS (65.62%), type of fertilizers used for fertigation through DIS (53.13%), filter use in DIS (51.56%), fertilizers application equipment in DIS (26.57%), type of lateral used in DIS, method of fertilizer application (17.19%) and 9.38 per cent of the DIF had medium level of knowledge about equipments fitted in DIS. Majority (54.69%) of the non-DIF had medium level of knowledge about equipments fitted in DIS, method of fertilizer application (20.31%), filter use in DIS (3.12%), fertilizers application equipment in DIS (1.56%), type of lateral used in DIS (1.56%), types and capacity drippers used in DIS (1.56%), operating pressure of DIS (1.56%), type of fertilizers used for fertigation through DIS (1.56%), irrigation interval through DIS (1.56%) and 1.56 per cent of the non-DIF respondent had medium level of knowledge about flushing interval of DIS.

Similarly, majority (7.82%) of the DIF had low level of knowledge about operating pressure of DIS, followed

by types and capacity dripper used in DIS (6.25%), filter use in DIS (4.69%) and type of fertilizers used for fertigation through DIS (1.56%). Whereas, majority (98.44%) of the non-DIF had low level of knowledge about fertilizers application equipment in DIS, followed by type of lateral used in DIS (98.44%), types and capacity drippers used in DIS (98.44%), operating pressure of DIS (98.44%), type of fertilizers used for fertigation through DIS (98.44%), irrigation interval through DIS (98.44%), flushing interval of DIS (98.44%), filter use in DIS (96.88%), method of fertilizer application (78.13%) and 32.81 per cent of the non-DIF had low level of knowledge about equipments fitted in DIS.

It could be concluded that majority of the DIF respondents had high level of knowledge about equipments fitted in DIS. Whereas, the majority of the DIF had medium level of knowledge about irrigation interval through DIS and majority of the non-DIF had medium level of knowledge about equipments fitted in DIS. However, some of the DIF had low level of knowledge about operating pressure of DIS and majority of the non-DIF had low level of knowledge about fertilizers application equipment in DIS.

The overall extents of knowledge regarding drip irrigation technology are presented in Table 3. The data

Table 2: Distribution of respondents according to their component wise level of knowledge regarding drip irrigation technology

Drip irrigation system	Level of knowledge					
	DIF (n=64)			Non-DIF (n=64)		
	Low	Medium	High	Low	Medium	High
Equipments fitted in DIS	0.00	9.38	90.62	32.81	54.69	12.5
Filter use in DIS	4.69	51.56	43.75	96.88	3.12	0.00
Fertilizers application equipment in DIS	0.00	26.57	73.43	98.44	1.56	0.00
Type of lateral used in DIS	0.00	17.19	82.81	98.44	1.56	0.00
Types and capacity drippers used in DIS	6.25	68.75	25.00	98.44	1.56	0.00
Operating pressure of DIS	7.82	65.62	26.56	98.44	1.56	0.00
Method of fertilizer application	0.00	17.19	82.81	78.13	20.31	1.56
Type of fertilizers used for fertigation through DIS	1.56	53.13	45.32	98.44	1.56	0.00
Irrigation interval through DIS	0.00	90.63	9.37	98.44	1.56	0.00
Flushing interval of DIS	0.00	78.13	21.87	98.44	1.56	0.00

Table 3: Distribution of the respondents according to their practice wise level of knowledge regarding drip irrigation technology

Category	DIF (n=64)		Non-DIF (n=64)	
	Frequency	Percentage	Frequency	Percentage
Low (<6.66)	00	00.00	63	98.43
Medium (6.67-13.34)	18	28.12	1	1.57
High (13.35-20)	46	71.88	00	00.00
Overall knowledge (%)		74.06		5.85

reveals that the majority of the DIF respondents (71.88%) had high level of knowledge regarding drip irrigation technology, followed by 28.12 per cent of DIF were having medium level of knowledge. Whereas, the majority of the non-DIF (98.43%) had low level of knowledge regarding drip irrigation technology, followed by only 1.57 per cent of non-DIF respondents had medium level of knowledge.

Regarding overall level of knowledge about drip irrigation technology, it was found (Table 3) that the DIF respondent had 74.06 per cent knowledge. Whereas, non-DIF respondents had only 5.85 per cent knowledge. This may be because of DIF respondents were using drip irrigation and hence had high knowledge in comparison to non-DIF respondents who were not using DIS.

Conclusion:

From the above research works it can be concluded that the majority of the DIF 89.04 per cent and the maximum 50.00 per cent of the non-DIF had high risk bearing capability. The majority (90.62%) of the DIF and majority (12.5%) of the non-DIF had high level of knowledge about equipments fitted in DIS. Whereas, the majority (90.63%) of the DIF had medium level of knowledge about irrigation interval through DIS and majority (54.69%) of the non-DIF had medium level of knowledge about equipments fitted in DIS. However, majority (7.82%) of the DIF had low level of knowledge about operating pressure of DIS and majority (98.44%) of the non-DIF had low level of knowledge about fertilizers application equipment in DIS. Regarding overall extents of knowledge about drip irrigation technology majority of the DIF (71.88%) had high level and non-DIF (98.43%) had low level of knowledge regarding drip irrigation technology.

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