Adoption of drip irrigation system by orange growers in Amravati Taluka

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ABSTRACT

Investigation was carried out during the year 2009 -10 from 15 villages of Amravati taluka of Amravati district, 120 respondents (orange growers) who adopted, drip irrigation system were randomly selected for the study. Data were collected from the orange growers with help of pretested schedule by personal interview method. The result revealed that majority 47.50 per cent of respondent orange growers had medium level of adoption of drip irrigation system while, 30.83 per cent of respondent orange growers were low level of adoption and 21.66 per cent of respondent posses high level of adoption of drip irrigation system. The correlation analysis related to independent variable *viz.* education, annual income, Innovation, knowledge, socio-economic status and, extent of extension contact, cosmopoliteness and awareness shows significant and positive relationship with adoption of drip irrigation system. While age, land holding and social participation showed negative and non-significant correlationship between adoption of drip irrigation system. Majority of respondents faced constraints like load shading of electricity for too long interval (10-14 hrs\day) expressed by 100 per cent of orange growers, damage due to rodents (85.00 per cent), choking of micro tubes and drippers (81.66 per cent), non-availability of repair services (85.00per cent) and lack of technical knowledge is 70.00 per cent and lack of knowledge about application of fertilizer (fertigation) (71.66 per cent). To overcome these constraints it was observed that provide regular supply of electricity, Increase the subsidy and facility on drip irrigation by government and training should be given to the farmers regarding operation, maintenance, repairing and application of water soluble fertilizers.

INTRODUCTION

Mandarin orange (*citrus reticulate*) is most common among citrus fruit grown in India It occupies nearly 50 per cent of total citrus area under orange in India, 2313.43 hectare and production 310 million tone. The leading producer of orange are Maharashtra, Assam, Madhya Pradesh, Punjab, Karnataka, Tamil Nadu, Meghalaya, Tripura, Haryana, Rajasthan and West Bengal.

The citrus tree needs good amount of water for high production and its is affected under deficit irrigation the total water requirement for citrus crop is 1400 mm while daily water requirement was 3.87 mm (Samudre and Sunny 2007). One of the reason for low yield is lack of concern towards irrigation management as the tree are sensitive to the availability of soil moisture status. The growth of orange tree is influenced by soil moisture, nutrient, environmental condition and management practices out of these factors of irrigation and fertigation is of great importance. Selection of proper irrigation method is of great importance in case of orange orchard. In Maharashtra 215.62 lakh ha. of the land is under different crop only 14.52 per cent in Vidarbha out of the 59.89 lakh ha cropped area is only 11.49 per cent is under irrigation.

Drip technology is the latest innovation of irrigation technique, system of drip irrigation is becoming increasingly popular and this is the need to save atmosphere in Maharashtra the area under drip irrigation has been increased upto 1,41,981.05 hectare till 2001 because of increase yield. 20-25 per cent, water saving 45-70% and fertilizer saving 20-40% in many orchards and vegetable crops. maximum yield increase due to drip irrigation was in vegetable (60%) followed by fruit (40%) and common crop (27%) (Jaware and Dixit, 2007).

METHODOLOGY

Amravati block is properly selected for the study. The study was conducted in Amravati taluka of Amravati district have orange in 6460.15 ha. Number of village in Amravati block are 120, total area under drip irrigation was 1209.39 ha. And no. of beneficiaries of drip irrigation system is 887 farmers under central and state sponsored scheme drip irrigation system.

Orange grower located in 15 villages, they were contacted at their places of residences and data was collected by personal interview. From 15 village 120 orange growers was

selected. The interview schedule was constructed by formulating relevant questions in accordance with study objective. The schedule included that, question pertaining to age, education, land holding, annual income, extension contact, and innovativeness of farmer, variable as well as adoption, constraints and suggestion about drip irrigation in orange crops. The information from respondents was collected by personal interview methods and their responses were considered for the purpose of the present study necessary help from the village level personnel was obtained. Data were related to the adoption, constraints and suggestion of orange growers was collected. Mean, standard deviation and correlation method were used to analysed the data.

It could be seen from Table 1 that out of four personal characteristics, namely education and annual income were found to be positive and significantly correlated with adoption of drip irrigation system. Age and land holding is characteristics from personal characteristics groups which shows negative and non-significant relationship between adoption of drip irrigation system. Like wise innovation, knowledge, socio-economic status and social participation all shows positive and significant correlation between adoptions of drip irrigation system and cosmopoliteness and awareness shows significant and positive relationship with adoption of drip irrigation system, These findings are supported by findings made by Bhosale, (2003), Patil, (2001).

Table 1: Coefficient of correlation of selected characteristics of respondents with their adoption

Sr. No.	Variables	Adoption	
		'r'	't'
1.	Age	- 0.1384	- 1.518 NS
2.	Education	0.2079	2.308*
3.	Land holding	0.0179	0.184 NS
4.	Annual Income	0.2062	2.289"
5.	Cosmpoliteness	0.2201	2.451*
6.	Innovativeness	0.2103	2.330*
7.	Social participation	- 0.011	- 0.128 NS
8.	Awareness	0.2335	2.609*
9.	Extent of extension contact	0.2980	3.392**
10.	Socio-economic status	0.2615	2.943"*
11.	Knowledge	0.2986	3.399**

NS-Non-significant
** and * indicate significance of values at P=0.05 and P=0.01, respectively

From Table 2, it was observed that with regarding to infrastructural constraints reported majority (85.00 percent) respondents had faced constraints like non-availability of repair services.

Table 2 : Constraints faced by orange growers while using drip irrigation

Sr. No.	Constraints	No. of orange growers	Percentage
1.	**Infrastructural constraints**		
	Non-availability of spare parts locally	43	35.83
	Non-availability of repair services	102	85.00
	Theft of drip set	27	22.50
2.	**Economic constraints**		
	Inadequate guidance from drip dealers	76	63.33
3.	**Information constraints**		
	Inadequate guidance from drip dealers	39	32.50
4.	**Technical constraints**		
	Lack of technical knowledge about drip set	84	70.00
	Choking of microtubes and drippers	98	81.66
	Faulty design and layout	45	37.50
	Water don't reach at tail end	77	64.16
	Inferior quality of material	63	52.50
	Crack in pipes	19	15.83
	Lack of knowledge about fertilizer application	86	71.66
	Irregular supply of Electricity	120	100.00
5.	**Other constraints**		
	Damage to drip sets by rats and rodents	102	85.00
	Storage problem during rainy season	38	31.66

With regarding to economic constraints near about 63.00 percent of the respondents reported that the spare parts of drip set was costly as a constraints.

It was observed that among the technical constraints 100% of respondent reported irregular supply of electricity 70.00 per cent of the respondents reported lack of technical knowledge about drip set, 81.66 per cent respondents reported choking of micro tubes and drippers. It was also reported by 64.16 per cent respondents that, constraints like water don't reach at tail end, inferior quality of material is 52.50 per cent, lack of knowledge about fertilizer application is 71.66 per cent.

Conclusion:

These findings revealed that 47.50 per cent of orange growers possessed medium level of adoption and 70.83 per cent possessed medium knowledge, but majority of

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them were unaware about important aspects of drip irrigation system. Such as damage due to rats and rodents (85.00%), choking of microtubes and drippers (81.66%), non-availability of repair services (85.00%) lack of fertilizer application (71.66%). Hence, the study suggested that intensive efforts should be made by extension workers at grass root level to educate the farmers and guide them about technical information of drip irrigation system.

To overcome the constraints, it is suggested that extension workers and company officers should arrange demonstration regarding maintenance of drip system. Training should be given to the farmers regarding operation, maintenance, repair, use of fertilizers, and chemical treatment through drip system. Spare parts should be supplied within a shortest possible time. The dealer should provide regular service to their clients.

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