

Adoption of management practices of drip irrigation for banana in Nanded District, M.S., India

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ABSTRACT

The present study was conducted in Nanded District of Marathwada region of Maharashtra state. The Nanded and Ardhapur talukas of Nanded district were purposively selected for the study. Sample of 120 respondents was purposively selected, 60 respondents from each taluka on the basis of their involvement in Adoption of management practices of drip irrigation for banana in Nanded district. The respondents were interviewed with the help of well structured interview schedule. The findings revealed that majority of the respondents had medium level of Knowledge and Adoption.

Key words : Drip irrigation, Banana crop, Irrigation.

Introduction

The water resources of India, as a whole, are substantial. However, the regional, seasonal and spatial distribution over its geographical area is uneven. The uncertainty of assurance of rainfall, location, time and in the optimum quantity has necessitated building of storage reservoirs. The needs for water are ever increasing with the development of the nation. Therefore, a systematic and scientific planning for the optimum utilization of the limited water resources of a river basin to meet several competing and continuously growing demand has become a challenging task for the scientists in the country. In the context of the regional boundaries, these resources are still much limited and hence they should be carefully planned for optimum utilization and judicious management.

In this system, the irrigation efficiency can be achieved to the extent of 90 per cent, while 30 to 40

per cent in conventional method of irrigation. Moreover, this system is more suitable for wider spaced crops especially fruit trees like, banana, pomegranate, grape, ber and orange orchards.

Drip irrigation method saves the water to the extent of 50 to 60 per cent, fertilizer by 25 to 30 per cent, which improves fertilizer efficiency, reduces the cost of inter cultivation by 30 to 40 per cent, increase the yield by 15 to 20 per cent, reduces weed infestation, maintain optimum soil-water-air balance around plant base and improves the quality of crops. In addition, it requires low energy, minimum maintenance and less expense on layouts etc. That is why drip irrigation system is becoming more popular because of its efficiency.

Objectives

1. To study the knowledge amongst the users about drip irrigation system.

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- To study the extent of adoption of recommended management practices of drip irrigation system by the respondents.

Methodology

The present study was conducted with specific objectives to study "Adoption of management practices of drip irrigation for banana in Nanded district" for these study two talukas viz. Nanded and Ardhapur, were selected purposively from Nanded district having high area under drip irrigation (i.e. 5470 ha) respectively and six villages from each taluka were selected purposively, from each villages ten respondents were selected comprising total sample of 120 respondents. Ex-Post Facto research design was used for the research study.

Findings

The findings obtained from the present study as well as relevant discussion have been presented as follows.

Knowledge amongst the users about drip irrigation system

The data presented in Table 1 revealed that majority (71.66 per cent) of the respondents had medium level of knowledge about drip irrigation system followed by 16.66 per cent and 11.66 per cent of

the respondents having high and low level of knowledge.

Table 1. Distribution of the respondents according to their level of knowledge

(N=120)

Sl. No.	Category	Frequency	Percentage
1	Low	14	11.66
2	Medium	86	71.66
3	High	20	16.66
	Total	120	100.00

Practice wise knowledge of drip irrigation by respondents is given in Table 2 revealed that the management practices of the drip irrigation system known to the most of the drip users were those i.e. regular use of pressure gauge (100.00 per cent), daily irrigation to crops under drip irrigation system (100.00 per cent), screen and sand types of the filter (90.00 per cent), use of pressure gauge to measure water of pressure (85.00 per cent), ventury pump is used for fertilizer application through drip (85.00 per cent), installation of ventury tank/pump before the filter tank (85.00 per cent), use of 100 per cent water soluble fertilizer for fertigation (75.00 per cent), sand filter is used for separation of impurities in water (75.00 per cent), cleaning of emitters and laterals once in a week (75.00 per cent), cleaning of main and sub-mains by providing high discharge

Table 2. Practice wise knowledge of the drip irrigation users about recommended management practices

(N=120)

Sl. No.	Particulars	Knowledge level	
		Frequency	Per cent
1.	Burying the submain one feet below the surface of soil	60	50.00
2.	Cleaning of main and submains once in a week	54	45.00
3.	Cleaning of emitters and laterals once in a week	90	75.00
4.	Hydrochloric acid treatment for declogging of emitters/dripper	54	45.00
5.	Screen and sand filter are the type of filter	108	90.00
6.	Sand filter is used for separation of impurities in water	90	75.00
7.	Copper sulphate are used for the control of Algae in water	24	20.00
8.	Cleaning of main and submains by providing high discharge water	78	65.00
9.	Regular use of pressure gauge	120	100.00
10.	Daily irrigation to crops under drip irrigation system	120	100.00
11.	Application of irrigation water during night or evening	60	50.00
12.	Pressure gauge is used for the measurement of pressure of water	102	85.00
13.	Guf plug used for closing of unwanted holes on the laterals	48	40.00
14.	Ventury pump is used for fertigation	102	85.00
15.	Use of 100 per cent water soluble fertilizers for fertigation	90	75.00
16.	Clogging of emitters due to salt, soil particles, bacterium and fungal slime	30	25.00
17.	12 and 16 mm diameter laterals are commonly used for drip irrigation	78	65.00
18.	Installation of ventury tank/pump before the filter tank	102	85.00

water (65.00 per cent) and 12 and 16 mm diameter laterals are used for drip irrigation (65.00 per cent).

Very few of the drip irrigation users knew the use of copper sulphate to control the growth of algae in water (20.00 per cent) and clogging of emitters due to salt, soil particles, bacterium and fungal slime (25.00 per cent).

Extent of adoption of recommended management practices of drip irrigation system by the respondents

It is elucidated from Table 3 that 78.33 per cent respondents had medium level of adoption of rec-

Table 3. Distribution of the respondents according to their level of adoption

(N=120)			
Sl. No.	Category	Frequency	Percentage
1	Low	12	10.00
2	Medium	94	78.33
3	High	14	11.66
	Total	120	100.00

ommended management practices related to drip irrigation system for banana followed by 11.66 per cent respondents had high level of adoption and 10.00 per cent had low level of adoption.

With a view to know the extent of adoption of various recommended management practices of drip irrigation for banana data have been tabulated in Table 4, the critical look to data revealed that more than fifty per cent of the respondents have completely adopted some practices such as, use of sand filter for separation of impurities in water (75.00 per cent), use of 100 per cent water soluble fertilizer for fertigation through drip (75.00 per cent), pressure gauge is used for the measurement of pressure of water (75.00 per cent), cleaning of emitters and laterals once in a week (65.00 per cent), declogging of emitters by HCl acid treatment (55.00 per cent), application of irrigation water during night or evening (50.00 per cent) and cleaning of main and submains once in a week (45.00 per cent).

It was also evident from Table 4 that the most of the respondents had not adopted the management

Table 4. Practice wise adoption of the management practices of drip irrigation system for banana

(N=120)

Sl. No.	Particulars	Adoption level					
		Full		Partial		Non	
		Freq.	per cent	Freq.	per cent	Freq.	per cent
1.	Cleaning of main and submains once in a week	54	45.00	12	10.00	54	45.00
2.	Cleaning of emitters and laterals once in a week	78	65.00	18	15.00	24	20.00
3.	Use of 1 kg pressure per sq. cm or 10 m pressure for equal discharge of water through emitters	36	30.00	54	45.00	30	25.00
4.	Length of laterals is not more to the extent where the pressure between first and last emitters should vary to the 20per cent	42	35.00	18	15.00	60	50.00
5.	Sand filter is used for separation of impurities in water	90	75.00	6	5.00	24	20.00
6.	Use of 75per cent or 2/3 sand in sand filter	6	5.00	90	75.00	24	20.00
7.	Use of HCl acid for declogging the emitters	66	55.00	6	5.00	48	40.00
8.	Use of 15-20 ppm HCl acid for declogging of emitters	48	40.00	30	25.00	42	35.00
9.	After chlorination or acid treatment do not use drip unit until 20 to 24 hrs	12	10.00	60	50.00	48	40.00
10.	Cleaning of screen filter once in a week	36	30.00	18	15.00	66	55.00
11.	Use of 100per cent water soluble fertilizers for fertigation through drip	90	75.00	18	15.00	12	10.00
12.	Placing of laterals at 20-30 cm distance from the banana plants	30	25.00	60	50.00	30	25.00
13.	Control of Algae in water by using of 0.05-2.0 mg Copper sulphate	18	15.00	30.00	25.00	72	60.00
14.	Application of irrigation water during night or evening	60	50.00	30.00	25.00	30.00	25.00
15.	Guf plug used for closing of unwanted holes on the laterals	24	20.00	18	15.00	78	65.00
16.	Pressure gauge is used for the measurement of pressure of water	90	75.00	12	10.00	18	15.00

practices of drip irrigation for banana like use of gulf plug for closing of unwanted holes on the laterals (65.00 per cent), control of algae in water by using 0.05-2.0 mg copper sulphate (60.00 per cent), cleaning of screen filter once in a week (55.00 per cent), length of laterals is not more to the extent where the pressure between first and last emitters should vary to the 20 per cent (50.00 per cent), cleaning of main and submains once in a week (45.00 per cent), use of HCl acid treatment for declogging the emitters (40.00 per cent) and after chlorination or acid treatment do not use drip unit until 20 to 24 hrs (40.00 per cent).

It was also observed that most of the respondents had partially adopted the management practices of drip irrigation for banana like 75 per cent or 2/3 sand is used in sand filter (75.00 per cent), after chlorination or acid treatment do not use drip unit until 20 to 24 hrs (50.00 per cent), placing of laterals at 20-30 cm distance from the banana plants (50.00 per cent), use of 1 kg pressure per sq. cm or 10 m pressure for equal discharge of water through emitters (45.00 per cent), 15 and 20 ppm HCl acid used for declogging of emitters (25.00 per cent), control of algae in water by using 0.05-2.0 mg Copper sulphate (25.00 per cent) and application of irrigation water during night or evening (25.00 per cent)..

Conclusion

The study concluded that the management prac-

tices of the drip irrigation system known to the most of the drip users were , Cleaning of main and submains once in a week, Burying the submain one feet below the surface of soil, HCL acid treatment for declogging of emitters, most of the respondent were regular use of pressure gage, use of 100% water soluble fertilizer for fertigation, after chlorination treatment do not use drip set up to 24hrs

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