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## Constraints and suggestions of extent of adoption of management practices of drip irrigation system for banana cultivation in Durg district of Chhattisgarh

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### Abstract

The present research work entitled “Study on extent of adoption of management practices of drip irrigation system for banana cultivation in Durg district of Chhattisgarh” was conducted at I.G.K.V. Raipur. This study focused to develop an index and measure extent of adoption of drip irrigation system management in Durg district of Chhattisgarh states. Durg and Dhamdha block was selected from Durg district looking to the maximum number of drip irrigation user. From each selected block six village was selected total twelve village was selected. One hundred twenty respondents were interviewed to measure extent of adoption of management practices drip irrigation systems for banana cultivation. The findings conclude that economic constraints ranking was concerned, „high initial cost of drip unit“ as the first rank, high cost for repairing, as the second rank, “higher cost of liquid fertilizer” as the third rank, higher cost of HCl acid “as fourth rank, higher cost of spare parts of drip unit” as the fifth rank. In technical and managerial constraints ranking given by farmers were clogging of emitter or dripper “as the first rank, „damage of laterals by rat/squirrel, as the second rank, Cracking of laterals” as the third rank and leakage of water as the fourth rank. The finding also concludes that majority of farmers 75.00 were lack of awareness about subsidy scheme.

**Keywords:** Drip irrigation system, banana, problems and suggestions

### Introduction

Artificial application of water in the field for crop growth and development is irrigation. About 80-90% part of plant is made of water. There are different sources of irrigation among them sources used in Chhattisgarh for irrigation purpose are Canal (60.25%), Tube well(35.43%), pond (2.90%), Well (1.39%). Major source of irrigation in India is tube well and in Chhattisgarh is Canal. The main types of PISs available are sprinkler irrigation and drip irrigation (surface and subsurface). Drip and sprinkler irrigation systems are much more water-efficient than conventional basin irrigation practices.

These have an application efficiency of 70%–90%, while the corresponding figures for basin irrigation are 40%–70% and 60%–70%, respectively. Sprinkler irrigation method has relatively lower water saving (up to 80% efficiency) than drip irrigation, since it supplies water over the entire field of the crop.

Drip irrigation is a type of irrigation method in which waters are reached to the plant through emitter / drippers that helps in providing small water droplets (drop by drop) directly to root zone of plants which helps in fulfilling water requirements of crop in a proper and adequate amount. The Government provides financial assistance/subsidy @ 55% of the indicative unit cost to Small & Marginal farmers and @45% to other farmers for encouraging them to install Drip and Sprinkler Irrigation systems under the PDMC scheme to enhance the coverage. In addition, some States provide additional incentives/top up subsidy to reduce farmers’ share for adoption of Micro Irrigation.

The highest area under drip irrigation is in Durg district (10.94%) followed by Mahasamund (10.20%), Kondagaon (9.54%) and lowest area under drip irrigation is observed in Sukma (0.10%). The total area under drip irrigation system in Chhattisgarh is 11759.3 hectare. The highest crop area under drip irrigation is of banana (36.06%) followed by tomato (24.58%), vegetable (23.11%) in Chhattisgarh.

The highest crop area under drip irrigation in Durg district of Chhattisgarh is of vegetable (36.85%) followed by tomato (35.91%), banana (8.40%) and lowest crop area under drip irrigation is observed in ginger (0.03%).

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The total crop having area under drip irrigation system in Durg district of Chhattisgarh is 1286.93 hectare.

The Chhattisgarh state have 108.15 hectare area in drip irrigation for banana crop with the production of around 6.17 lakh metric tons. The major state in banana cultivation is Raipur, Bilaspur, Durg, Mahasamund, Bemetara. Among the all state in Chhattisgarh Durg area has highest area under drip irrigation for banana crop (108.15 ha), followed by Bemetara (90.25 ha)

### Materials and Methods

The study was conducted in Durg district of Chhattisgarh state during the year 2021-22. The Durg district was selected purposively because there were highest area hectare of banana crop cultivation under drip irrigation in Chhattisgarh plains, comes under this district. Out of total 3 blocks in the Durg district, Durg and Dhamdha blocks were selected purposively looking to the maximum numbers of banana growers under drip irrigation system. A list of drip irrigation system of banana growers were obtained from the office of Assistant Director of Horticulture, Raipur, Thereafter, 12 villages namely Anjora, Basin, Borai, Dhaba, Kachandur, Pursai, from Durg block, and Achholi, Barharpur, Bhatakokadi, Cheecha,

Daniya and Godhi from Dhamdha block were selected randomly. From each selected villages ten (10) farmers who were using drip irrigation for banana cultivation was selected purposively, thus total 120 (12x10=120) farmers were considered as respondents for this study. The data were collected personally through pre-tested interview schedule. Collected data was tabulated and processed by using appropriate statistical tools and methods

### Results and Discussion

The result and discussions of the present study has been summarized on the basis of response of respondents regarding to identify the problems faced by extent of adoption of management practices of drip irrigation system for banana cultivation in Durg district of Chhattisgarh and to obtain the suggestions from them to improve the adoption of management practices of drip irrigation system for banana cultivation. The results found that multiple responses were taken to ascertain the problems faced by the banana growers in adoption of recommendation management practices of Drip irrigation system in Banana cultivation. On the basis of responses obtained from the respondents, various problems are presented in Table 1.

**Table 1:** Constraints faced by respondents in adoption of management practices of drip irrigation system

Constraints	Frequency	Percentage
Economic constraints		
Higher initial cost of drip unit	96	80
Higher cost for repairing	60	50
Higher cost of spare parts of	36	30
drip unit		
Higher cost of HCl acid	45	37.5
Higher cost of liquid fertilizer	58	48.33
Technical constraint		
Clogging of emitter or dripper	113	94.16
Damage of laterals by	86	71.66
rat/squirrel		
Leakage of water	50	41.66
Cracking of laterals	68	56.66
Other Constraints		
Lack of awareness about	90	75
subsidy scheme		

The data of table 1 showed that as economic constraints are concerned, higher initial cost of drip unit (80 percent), higher cost for repairing (50 percent), higher cost of liquid fertilizer (48.33 percent), higher cost of HCl acid (37.50 percent), higher cost of spare parts of drip unit (30 percent).

The data further revealed that the respondents faced technical constraints like, clogging of emitter or dripper (94.16 percent), damage of laterals by rat/squirrel (71.66%), Cracking of laterals (56.66 percent) and leakage of water

(41.66%), the data also revealed that majority of respondents 75.00 had Lack of awareness about subsidy scheme is the main constraint in adoption of drip irrigation system.

Suggestions obtain from respondents in adoption of drip irrigation technology as regards to the „suggestions given by the respondents to overcome the problem faced by them during the adoption of drip irrigation production are presented in the Table 2.

**Table 2:** Suggestions given by respondents in adoption of Drip Irrigation technology

Particular	Frequency	Percentage	Rank
loan and credit procedure must be simple	63	52.5	IV
Proper training should be given	45	37.5	V
Minimize the cost of drip irrigation system	78	65	I
planting material should be available in time	38	31.66	VI
knowledge about government subsidy scheme in time	67	55.83	III
Proper training should be given	76	63.33	II

The data revealed from the Table 2 that the cost of drip irrigation system to minimized (65.00%), Proper training should be given (63.33%), knowledge about government

subsidy scheme in time (55.83%), loan and credit procedure must be simple (52.50%), Proper training should be given (37.50%) and planting material should be available in time

(31.66%).

### **Conclusion**

The major economic constraints faced by respondents were, high initial cost of drip unit“ where as technical constraint was, clogging of emitter or dripper“ and other constraint was, lack of awareness about subsidy scheme“. Maximum respondents suggested that cost of drip irrigation system to be minimized, and proper training to be provided.

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