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Strategy to Overcome the Constraints of Drip Irrigation System : A Study of Panchayat Samiti, Jhotwara, District Jaipur (Rajasthan)

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ABSTRACT

The Indian population is continuously increasing which demand more food grain production to fill vagaries of population. Therefore, to meet the projected food demands of 21st century and to harvest maximum benefits from every unit of available land, resource and other critical inputs needs to be exploited. Water is the most precious natural source, vitally important for agricultural development and day-to-day living of human beings. In the changing agricultural scenario world over and shift towards precision farming, drip irrigation happens to be the technology capable of providing more efficient utilization of water. The study was conducted in Jhotwara panchayat samiti of district Jaipur (Rajasthan). Fifty per cent (8) Gram Panchayats where maximum number of drip irrigation sets installed were selected. Two villages from each selected Gram Panchayats were selected randomly. Ninety six farmers were selected from sixteen selected village by using of random sampling technique through proportional allocation to be size of sample. The study shows that the among the important suggestions offered by the drip irrigation adopters to overcome the constraints faced in adoption of recommended improved practices of drip irrigation system, "Provision of sufficient subsidy to reduce initial installation cost" (91.66%) which was prioritized at top level. Least priority was given to the appropriate strategy i.e. "Control on nepotism and favoritism in installation of drip sets on subsidized rate" (55.20%).

Keywords: Constraints, Drip irrigation system

INTRODUCTION

The drip irrigation system is, especially, suitable for saline and alkaline soil which increase water use efficiency up to 80 to 90 per cent. Bahuguna (1996) stated that by drip system of irrigation, 95 per cent of the irrigation water can be used efficiently. By this method 30 to 50 per cent production may also be increased (Yojana July, 2010).

Rajasthan has largest geographical area in India but having only 1 per cent water resources of country. Due to arid and semi-arid climate *i.e.* negative moisture index, poor soil quality and traditional agriculture practices, the food security, nutritional security, sustainability and profitability of horticulture production system is still a distant dream in the state. The major sources of water in the state are wells and tube wells. Irrigation scenario of Rajasthan is characterized by erratic or scanty rainfall, dwindling ground water resources, increasing alternative demand of municipal and industrial sector that means less water available for agriculture. The ground water is also lowered down day by day in Rajasthan at 5 to 10 feet per year and majority of the area has become under dark zones. Therefore, drip irrigation system is become very profitable as it saves 60-70 per cent water as compared to surface irrigation and other methods and reduces labour cost, protects the plants from diseases by minimizing humidity in atmosphere. Therefore, an attempt has been made to measure the Extent of Adoption of Drip Irrigation System by the farmers in Jhotwara panchayat samiti of district Jaipur (Rajasthan).

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METHODOLOGY

The study was conducted in Jaipur district of Rajasthan. District Jaipur was selected purposively for the study. The Jaipur district consists fifteen panchayat samiti, out of which Jhotwara panchayat samiti was selected randomly. Eight gram panchayats were selected randomly from selected Jhotwara panchayat samiti. Two villages were selected from each selected gram panchayat of Jhotwara panchayat samiti having maximum number of drip irrigation sets. Thus, sixteen villages were selected purposively. Ninety six farmers were selected from sixteen selected villages on the basis of proportional allocation to the size of sample. The data were collected through developed interview schedule by face to face contact method.

The collected data pertaining to extent of adoption of drip irrigation system were analyzed and presented based on mean and standard deviation (S.D) as follows: Low adopters (Less than Mean- S.D.), Medium adopters (Between Mean- S.D. and Mean + S.D.) and High adopters (More than Mean + S.D.).

RESULTS AND DISCUSSION

Some suggestions were invited from the drip irrigation system adopters to overcome the constraints faced by the farmers and to increase the profitability of drip irrigation through open ended questions and through investigators personal experience gained by the investigator during the research work was also incorporated. The frequencies were calculated for each suggestion and converted into percentage. The suggestions along with their percentage are presented in Table 1. Among the important suggestions offered by the drip irrigation adopters to overcome the constraints faced in adoption of improved practices of drip irrigation system most of the respondents, (91.66%) were suggested about the aspect viz., "Provision of sufficient subsidy to reduce initial installation cost", hence, it was ranked first. The second rank was accorded to the suggested aspect "Motivation of farmers for adoption of drip irrigation system" as it was suggested by 88.54 per cent farmers followed by "Demonstration of drip irrigation system as a model" (83.33%), "Provision of regular repair and maintenance of drip irrigation system" (82.29%), "Regular training of drip set users" (80.20%), "Regular clean up of drippers in saline water areas" (77.08%), "Government or agency should regularly supply the spare parts at least cost" (76.04%), "Government should make arrangement of electricity supply, regularly" (75.00%), "Encourage the mulching to reduce evapo-transpiration at field level" (71.87%), "Increase the efficiency and usable life of drip sets" (69.79%), "Prepare a local trained resource person for operation and repairing of drip sets" (66.66%), "Regular monitoring and evaluation of the use efficiency of drip sets" (64.58%), "Encourage the local manufactures to produce low cost drip sets" (58.33%) and "Control on nepotism and favoritism in installation of drip sets on subsidized rate" (55.20%), which were ranked III, IV, V, VI, VII, VIII, IX, X,XI, XII, XIII and XIV, respectively.

Based on the findings about the appropriate strategy of individual aspects of drip irrigation system, it was noted that suggestion 'Provision of sufficient subsidy to reduce initial installation cost' offered by the respondents was got the top rank. This might be due to the facts that the farmers felt that initial cost of drip sets are very high, therefore, they were suggested that the bank or government should be provided the sufficient subsidy to reduce the initial cost of installation of drip irrigation system to all categories of farmers. It was followed by 'Motivation of farmers for adoption of drip irrigation system'. This might be due to the facts that the farmers were unaware about the cost benefit ratio of drip sets. So they were suggested that they might be motivated through exposure visit and demonstration of drip sets by the experts on the farmer's field. The third ranked appropriate suggestion was 'Demonstration of drip irrigation system as a model'. This might be due to the facts that the agencies or dealers motto is to achieve maximum profit anyhow from the drip sets without considering the publicity of the product. So the farmers were suggested that the drip irrigation system should be popularized through the demonstration and exhibitions of drip sets at village level. The suggestion 'Provision of regular repair and maintenance of drip irrigation system may be due to the fact that the dealers/firms were not provided repair and maintenance services after installation

of drip sets. Therefore, the farmers were suggested that the government should make easy terms and conditions of supplying and repairing of drip sets and bound the government agency or private company to repair the drip sets in time regularly. Regular training of drip set users might have been suggested due to the fact that government might have not provided the training to the drip set users. Therefore, the farmers suggested that local farmers may be educated and trained in operation and maintenance of drip irrigation system. Regular clean up of drippers in saline water areas was also suggested may be due to the fact that agencies/government/dealers might have not provided the clean-up material of drip sets. So the farmers were suggested that the companies/ governments/local market should be provided the extra clean-up material at low cost specially in saline water areas.

The suggestion 'Government or agency should regularly supply the spare parts at least cost might be due to the fact that the Government or agency might have not provided the spare parts of drip sets. So that the farmers were suggested that the government or local agency should regularly arrange and supply the spare parts of drip sets and insured that the spare parts should be available in the local market. The Government should make arrangement of electricity supply, regularly as for proper functioning it's the basic requirement. Therefore, the farmers were suggested that the government should be ensured to make regular supply of electricity and encourage the alternate source of electricity like solar energy etc. Encourage the mulching to reduce evapo-transpiration at field level relates the fact that the evapo-transpiration rate is very high on farmer's field due to high temperature. Increase the efficiency and usable life of drip sets may be factually supported that the drip sets are installed at surface of the soil which directly in contact with sunlight and also harmed by rats, squirrels, an animal etc. that decreases the life and efficiency of the drip sets. Therefore, the respondents were suggested that the drip sets should be installed at the sub-surface of the soil to protect from direct sunlight and from others also increases usable life of it. Prepare a local trained resource person for operation and repairing of drip sets have relevance with the fact that the local experts of drip irrigation system might not be available as such, the farmers were suggested that the government or agency should trained the local people as a resource person in all respects like from installation to after care of the drip sets. The twelfth ranked appropriate suggestion was 'Regular monitoring and evaluation of the use efficiency of drip sets'. This might be due to the fact that the government or private agency might have not monitored and evaluated the use efficiency of drip sets after

Table 1: Suggestions to overcome the constraints of drip irrigation system (N = 96)

Suggestions	Frequency	Percentage	Ranks
Provision of sufficient subsidy to reduce initial installation cost	88	91.66	I
Motivation of farmers for adoption of drip irrigation system	85	88.54	II
Demonstration of drip irrigation system as a model	80	83.33	III
Provision of regular repair and maintenance of drip irrigation system	79	82.29	IV
Regular training of drip set users	77	80.20	V
Regular clean up of drippers in saline water areas	74	77.08	VI
Government or agency should regularly supply the spare parts at least cost	73	76.04	VII
Government should make arrangement of electricity supply, regularly	72	75.00	VIII
Encourage the mulching to reduce evapo-transpiration at field level	69	71.87	IX
Increase the efficiency and usable life of drip sets	67	69.79	X
Prepare a local trained resource person for operation and repairing of drip sets	64	66.66	XI
Regular monitoring and evaluation of the use efficiency of drip sets	62	64.58	XII
Encourage the local manufactures to produce low cost drip sets	56	58.33	XIII
Control on nepotism and favoritism in installation of drip sets on subsidized rate	53	55.20	XIV

installation at farmer's field. Therefore, the respondents were suggested that the government should regularly monitor the drip irrigation system after installation and should also be taken the feedback from the users of drip irrigation system. The next appropriate suggestion was 'Encourage the local manufactures to produce low cost drip sets'. This might be due to the fact that the initial cost of drip set is very high. Therefore, the respondents were suggested that the local manufactures of drip set should be encouraged so that they may minimized the production cost of drip sets and supply by using of low cost technology and also may break the monopoly of the company. Control on nepotism and favoritism in installation of drip sets on subsidized rate as a constraint may be due to the fact that the respondents might have felt such problems in getting the drip set on subsidized rate and other repairing services after installation of the drip sets. Therefore, they were suggested that the government officially should regularly watch and control the malpractices of utilization of subsidy of drip sets prevent the nepotism and favoritism.

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