

Study on Drip Irrigation in Banana - District of Kaushambi (U.P.)

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Abstract: *Banana (Musa sp.) is the second most important fruit crop in India next to mango. Its year round availability, affordability, varietal range, taste, nutritive and medicinal value makes it the favourite fruit among all classes of people. This study attempts at reviewing the effect of drip irrigation in banana (Musa paradissica L) in the district of Kaushambi in Uttar Pradesh. Micro-irrigation is introduced primarily to save water and increase the water use efficiency in agriculture. However, it also delivers many other economic and social benefits to the society. Primary data were collected using a well structured questionnaire administered on 139 banana farmers in the study area. Advantages in adoption of drip irrigation over flood irrigation is observed as 8.46% higher, 17.24% more as girth of plants, 2.94% more leaves, 40% more bunch weight and yield is 21.95 % is more. Fruit setting takes place 28 days earlier and average harvesting period is less by 32 days. There is a saving of 38.82 % water. Concerned problems in adoption of drip irrigation are irregular and insufficient availability of electricity, low price of canal water, fear about clogging of drip system, high establishment cost, insufficient awareness of its benefits, lack of training and extension facilities for farmers. It is observed that banana is being irrigated by flooding water although the drip system is installed in the field. The practice of drip irrigation should be encouraged in the banana fields. Benefit-cost ratio should be demonstrated to farmers. Proper training and extension services should be ensured.*

Key words: *Advantages, Banana, Drip irrigation, Kaushambi, water*

I. Introduction

Banana (*Musa paradissica L.*) is one of the oldest fruits known to mankind . Banana is a globally very well recognized important fruit crop with overall production of 97.5 million tones. In India total production of banana is 16.91 million tones from 490.70 thousand ha with national average of 33.5 T/ha. Banana contributes 37% to total fruit production in India. It contributes more than 2.8% to GDP of agriculture in India. It ranks second in area and first in production only after mango in this country.

Banana in India is known as “Instant energy provider”, which is cheap, nutritious and available all round the year. Banana requires large quantity of water during its life cycle. Water is becoming increasingly scarce worldwide due to various reasons. (Rosegrant, et.al. 2002). The problem of water scarcity is expected to be aggregated further (Biswas,1993;Rosegrant,1997: Rosegrant et al.,2002) In spite of having the largest irrigated area in the world, India too has started facing sever water scarcity in different regions. Owing to various reasons the demand for water for different purposes has been continuously increasing in India, but the potential water available for future use has been declining at a faster rate (Saleth, 1996; CWC, 2005). The agricultural sector (irrigation), which currently consumes over 80 percent of the available water in India, continues to be the major water-consuming sector due to the intensification of agriculture (see, Saleth, 1996; MOWR, 1999, Iyer, 2003).

I.I Drip irrigation

Drip irrigation refers to frequent application of small quantities of water on or below the soil surface as drops. It embodies the philosophy of irrigating the root zone instead of entire land.

Banana being a succulent, evergreen and shallow rooted crop requires large quantity of water of increasing productivity. Water requirement of banana has been worked out to be 1800-2000 mm per annum. In winter, Irrigation is provided at an interval of 7-8 days while in summer it should be given at an interval of 4-5 days. However, during rainy season irrigation is provided if required as excess irrigation will lead to root zone congestion due to removal of air from soil pores, thereby affecting plant establishment and growth. In all, about 70-75 irrigations are provided to the crop. Application of drip irrigation and mulching technology has reported to improve water us efficiency. There is saving of 58% of water and increase yield by 23-32% under drip. Raw bunch gets matured earlier by 30-45 days and yield is increased by 15-30% and 58-60% of water is saved on

irrigation. Water use efficiency of drip was higher and the system saved 50 % of irrigation water. Yield of drip irrigated plants was also higher (B. Cevik, 1988).

I.II Objective

- To find out effect of drip irrigation in banana.

I.III Methodology

The area selected for the present study is district Kaushambi. In 1997 new district namely Kaushambi has been formed covering some parts of Allahabad, which is called banana belt, the most favorable for producing best quality of banana. The district headquarter is Manjhanpur. District Kaushambi comprises of 3 revenue sub division and 8 development blocks. The total geographical area of the district is 2012.8 sq. km. In order to approach the objective of the study, Multistage Sampling technique is adopted. District Kaushambi is selected purposively because of banana cultivation in large scale and also due to better profitable cash crop. List of banana cultivating villages with area under banana crop is prepared. Further the list of banana cultivators is prepared with the help of concerned officials. Survey method was used to collect the primary data with the help of pre-tested schedules.

In district Kaushambi 4 development blocks namely Kaushambi, Manjhanpur, Mooratganj and Nevada were studied with 61, 42, 19 and 17 farmers respectively.

II. Result And Discussion

Table:1 Effect of drip irrigation in banana

Sl.No.	Particulars	Unit	Flood/Furrow Irrigation	Drip irrigation	Difference
1	Height of plant	cm.	150.55	163.3	+8.46%
2	Girth of plant	cm.	58	68	+17.24%
3	Average no. of leaves	Nos./plant	34	35	+2.94%
4	Average Fruit setting period	Days	342	314	-28 days
5	Average harvesting period	Days	432	400	-32 days
6	Average weight of bunch	Kg.	25	35	+40 %
7	Percentage of plants harvested	%	75	90	+20%
8	Yield	Tonnes/ha.	41	50	+21.95%
9	Water saved	%	-	38.82	-

In the Kaushambi District of Uttar Pradesh, irrigation in banana crop is mostly by flood irrigation and few adopt drip irrigation together with flood irrigation. From the above table advantages are observed in adoption of drip irrigation over flood irrigation as 8.46% higher in plant height, 17.24 % more as girth of plant, 2.94% more as average number of leaves, fruit setting takes place 28 days earlier. Average harvesting period is less by 32 days. Average bunch weight is 40% more. Yield is 21.95 % more. 38.82 % water is being saved by drip system.

II.I Concerned problems in adoption of drip irrigation

- Irregular and insufficient availability of electricity
- Low price of canal water
- Fear about drip system clogging
- Water availability by drip system is not satisfactory
- Services availability of drip system
- Unaffordable Establishment cost for the drip system.
- Insufficient awareness of its benefit
- Lack of training and extension facilities for farmers

III. Suggestions And Recommendation

- It is observed that banana is being irrigated by flooding water although the drip system is installed in the field. The practice of drip irrigation should be encouraged in the banana fields. Since the farmers are getting water for the low cost from the public irrigation system , they are least interested to adopt this technology.
- It is observed that farmers are very well aware with the benefits of drip irrigation system but they are hesitant to adopt this technology because they are not having proper information. Benefit –cost ratio should be demonstrated to farmers.
- Drip irrigation system requires Rs.20000.00 - Rs.50000.00 per hec. depending upon the nature of crops. Subsidy is not easily available

- Training facilities for farmers are essential to increase the adoption of drip irrigation. All registered suppliers under Govt. schemes should provide facilities for training of farmers in operation and maintenance of the system.
- Extension workers must ensure about spreading awareness of its benefits and also about scarcity of natural resources like water.

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