

A

Seminar report

on

# Drip Irrigation

Submitted in partial fulfillment of the requirement for the award of degree  
of CIVIL

**SUBMITTED**

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## **Preface**

I have made this report file on the topic **Drip Irrigation**; I have tried my best to elucidate all the relevant detail to the topic to be included in the report. While in the beginning I have tried to give a general view about this topic.

My efforts and wholehearted co-corporation of each and everyone has ended on a successful note. I express my sincere gratitude to .....who assisting me throughout the prepration of this topic. I thank him for providing me the reinforcement, confidence and most importantly the track for the topic whenever I needed it.

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## Introduction

Irrigation may be defined as the process of supplying water to land by artificial means for the purpose of cultivation. Ordinarily water is supplied to land by nature through rain but generally it is not enough for the proper growth of plants. As such as the basic objective of irrigation is to supplement the natural supply of water to land so as to obtain the an optimum yield from the crop grown on the land.

In order to achieve this objective of irrigation, an irrigation system is required to developed, which involves planning, designing, construction, operation and maintenance of various irrigation works viz, a source of water supply, a distribution system for carrying water from the source to the agricultural land and its application on the land, and various other associated works. The factors which necessitate irrigation are:

- Ø Inadequate rainfall
- Ø Uneven distribution of rainfall
- Ø Growing a number of crops during a year
- Ø Growing superior crops

## **What is Drip Irrigation?**

Drip irrigation, also known as trickle irrigation or micro irrigation or localized irrigation, is an irrigation method that saves water and fertilizer by allowing water to drip slowly to the roots of plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. It is done through narrow tubes that deliver water directly to the base of the plant.

## **Why should I use drip irrigation?**

Drip irrigation saves water because little is lost to runoff or evaporation. This watering method also promotes healthy plant growth, controls weed growth, and reduces pest problems.

## **METHODS OF IRRIGATION**

Irrigation methods are commonly designated according to the manner in which water is applied to the land to be irrigated.

### **Surface Irrigation Methods**

The water is applied by spreading in it sheets or small streams on the land to be irrigated. These methods are adopted for perennial irrigation system.

### **Sprinkler Irrigation Methods**

The irrigation water is applied to the land in the form of spray, somewhat as in ordinary rain. It can be used for all the crops except rice and jute and for almost all soils except very heavy soils with very low filtration rates.

### **Sub-Surface Irrigation Methods**

The water is applied below the ground surface so that it is supplied directly to the root zone of the plants. The main advantages of these methods are that the evaporation losses are considerably reduced and the hindrance caused to cultivation by the presence of borders, pipes and field channels in the other methods of irrigation is eliminated.

## **ADVANTAGES**

### **Reduced water use**

Because drip irrigation brings the water to the plant root zone and does not wet the entire field, drip irrigation typically requires half to a quarter of the volume of water required by comparable overhead-irrigation systems.

### **Joint management of irrigation and Fertilization**

Drip irrigation can improve the efficiency of both water and fertilizer. Precise Application of nutrients is possible using drip irrigation. Hence, fertilizer costs and soluble nutrient losses may be reduced with drip irrigation. Nutrient applications may also be better timed to meet plant needs.

### **Reduced pest problems**

Weed and disease problems may be reduced because drip irrigation does not wet the row middles or the foliage of the crops as does overhead irrigation.

### **Simplicity**

Polyvinyl chloride (pvc) and polyethylene parts are widely available in several diameters and are easy to assemble. Many customized, easy-to-install connectors, endcaps, and couplers are available in different diameters. Cutting and gluing allows for timely repairs.

### **Low pumping needs**

Drip systems require low operating pressure (20-25 psi at field entrance, 10-12 psi at the drip tape) compared to overhead systems (50-80 psi). Many existing small pumps and wells may be used to adequately irrigate small acreage using drip systems.

### **Automation**

Drip-irrigation application may be simply managed and programmed with an AC- or battery-powered controller, thereby reducing labor cost.

### **Adaptation**

Drip systems are adaptable to oddly shaped fields or those with uneven topography or soil texture, thereby eliminating the underutilized or non-cropped corners and maximizing the use of available land.

### **Production advantages**

Combined with raised beds, polyethylene mulch, and transplants, drip irrigation enhances earliness and crop uniformity. Using polyethylene mulch also increases the Cleanliness of harvested products and reduces the risk of contamination with soil-born pathogens. Reflective mulches further help reduce the incidence of viral diseases by affecting insect vectors, such as thrips, whiteflies or aphids.

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## **DISADVANTAGES**

### **Drip irrigation requires an economic Investment**

Drip-irrigation systems typically cost \$500 - \$1,200 or more per acre .Part of the cost is a capital investment useful for several years, and another part is due to the annual cost of disposable parts. Growers new to drip irrigation should start with a relatively simple system on a small acreage before moving to a larger system.

### **Drip irrigation requires maintenance and high-quality water**

Once emitters are clogged or the tape is damaged, the tape must be replaced. Water dripping from an emitter and the subsequent wetting pattern are hard to see, which makes it difficult to know if the system is working properly. Proper management of drip irrigation requires a learning period.

### **Water-application pattern must match planting pattern**

If emitter spacing (too far apart) does not match the planting pattern, root development may be restricted and/or plants may die.

### **Safety**

Drip tubing may be lifted by wind or may be displaced by animals unless the drip tape is covered with mulch, fastened with wire anchor pins, or lightly covered with soil.

### **Leak repair**

Drip lines can be easily cut or damaged by other farming operations, such as tilling, transplanting, or manual weeding with a hoe. Damage to drip tape caused by insects, rodents or birds may create large leaks that also require repair.

## CONCLUSIONS

Drip irrigation is a latest sub-surface method of irrigating water with higher water demands in arid region. It may not be applicable to all farms. Yet, when properly designed, installed and managed, drip irrigation may help achieve water conservation by reducing evaporation and deep drainage when compared to other types of irrigation such as flood or overhead sprinklers since water can be more precisely applied to the plant roots. In addition, drip can eliminate many diseases that are spread through water contact with the foliage. It also results reduced energy costs.

## References

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