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Drip Irrigation Method

Ram Prakash[1*], Madan Gopal[2]

[1]Ph.D Research Scholar, Department of Agronomy, Acharya Narendra Deva University of Agriculture & Technology, Kumarganj, Ayodhya (U.P.), India

[2]Department of Agronomy, IFTM University,

Moradabad U.P

*Corresponding Author

Ram Prakash*

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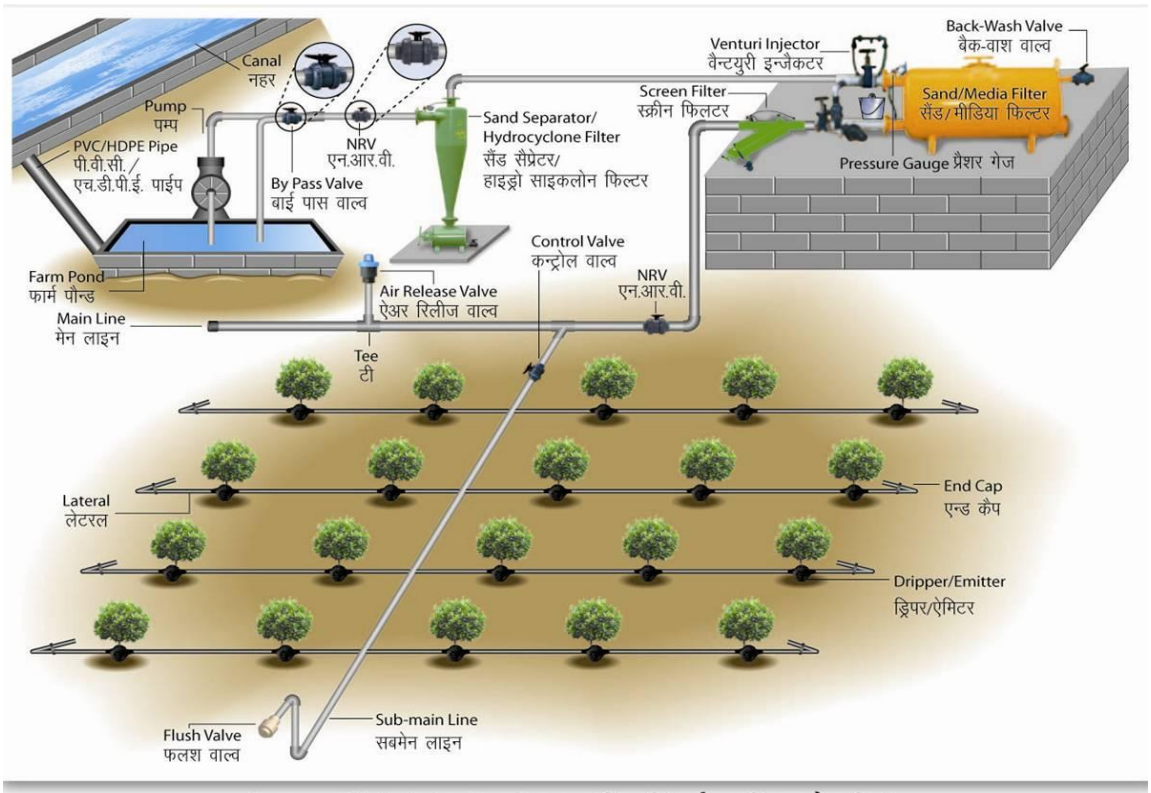
INTRODUCTION

Land and water the basic need for agriculture and economic development of the country. According to International Water Management Institute (IWMI), one third of the world population face absolute water scarcity by the year 2025.Agriculture which consumes more than 80 % of the country exploitable water resources. Drip Irrigation method, also called drop by drop irrigation, and underground irrigation, functions as its name imply. Drop by drop, water is distributed to the active root zone of plants. This method, if managed properly, might be the most water-supply-efficient way of irrigation because runoff and evaporation reduced significantly. Drip irrigation in today's agriculture, is frequently integrated with plastic sheet, further diminishing evaporation, and is also a method of fertilizers delivery to the plants. This process called fertigation (fertilizer + irrigation). Drip irrigation is sometimes called trickle irrigation and involves dripping water onto the soil at very low rates (2-20 liters/hour) from a system of small diameter plastic pipes fitted with outlets called emitters or drippers. Water is applied close to plants so that only part of the soil in which the roots grow is wetted, unlike surface and sprinkler irrigation, which involves wetting the whole soil profile. With drip irrigation water, applications are more frequent (usually every 1-3 days) than with other methods and this provides a very favorable high moisture level in the soil in which plants can flourish.



Layout of Drip Irrigation System (ड्रिप सिंचाई पद्धति का रेखाचित्र)

Drip System Layout

Pump unit
Control head
Main and sub main lines
Laterals
Emitters or drippers.

Drip Irrigation Emitters Types Definition

Drip emitter's types and applications.

Review and analysis of the different types of irrigation Drip emitters known as Drippers
The main division is between: On-line Drippers and In-line Drippers also known as integral

Suitable crops

Drip irrigation is most suitable for row crops (vegetables, soft fruit), tree and vine crops where one or more emitters can be provided for each plant. Generally only high value crops are considered because of the high capital costs of installing a drip system.

Suitable slopes

Drip irrigation is adaptable to any farmable slope. Normally the crop would be planted along contour lines and the water supply pipes (laterals) would be laid along the contour also. This is done to minimize changes in emitter discharge as a result of land elevation changes

Suitable soils

Drip irrigation is suitable for most soils. On clay soils water must be applied slowly to avoid surface water pounding and runoff. On sandy soils higher emitter discharge rates will be needed to ensure adequate lateral wetting of the soil.

Suitable irrigation water

One of the main problems with drip irrigation is blockage of the emitters. All emitters have very small waterways ranging from 0.2-2.0 mm in diameter and these can become blocked if the water is not clean. Thus it is essential for irrigation water to be free of sediments. If this is not so then filtration of the irrigation water will be needed.

Blockage may also occur if the water contains algae, fertilizer deposits and dissolved chemicals which precipitate such as calcium and iron. Filtration may remove some of the materials but the problem may be complex to solve and requires an experienced engineer or consultation with the equipment dealer.

Drip irrigation is particularly suitable for water of poor quality (saline water). Dripping water to individual plants also means that the method can be very efficient in water use. For this reason it is most suitable when water is scarce.

Advantages-

- High water application efficiency and lower labour costs
- Mixed fertilizer/nutrient loss due to localized application and reduced leaching
- Ability to irrigate irregular shaped fields. Levelling of the field not necessary
- Allows safe use of recycled (waste-) water
- Moisture within the root zone can be maintained at field capacity and minimised soil erosion
- Soil type plays less important role in frequency of irrigation
- Highly uniform distribution of water i.e., controlled by output of each nozzle
- Usually operated at lower pressure than other types of pressurized irrigation, reducing energy costs

Disadvantages-

- Expensive initial cost can be more than overhead systems (commercial system)
- The sun can affect the tubes used for drip irrigation, shortening their usable life
- If the water is not properly filtered and the equipment not properly maintained, it can result in clogging
- Drip irrigation might be unsatisfactory if herbicides or top dressed fertilizers need sprinkler irrigation for activation
- Waste of water, time & harvest, if not installed properly
- Systems require careful study of all the relevant factors like land topography, soil, water, crop and agro-climatic conditions, and suitability of drip irrigation system and its components
- Without sufficient leaching (most drip systems are designed for high efficiency, meaning little or no leaching fraction), salts applied with

the irrigation water may build up in the root zone.

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Google https://en.wikipedia.org/wiki/Drip_irrigation#:~:text=Drip%20irrigation%20or%20trickle%20irrigation,or%20buried%20below%20the%20surface.