

**SPRINKLER  
AND  
MICRO IRRIGATION SYSTEMS  
CUTM1135**

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# **SPRINKLER IRRIGATION:**

- **ADAPTABILITY**
- **PROBLEMS AND PROSPECTS**
- **TYPES OF SPRINKLER IRRIGATION SYSTEMS**



# **SPRINKLER IRRIGATION**



- **In the sprinkler method of irrigation, water is spread into the air and allowed to fall on the ground surface somewhat resembling rainfall.**

# SPRINKLER IRRIGATION:

- **Applying water under pressure**
- **The sprinkler system is ideal in areas where water is scarce.**
- **A Sprinkler system conveys water through pipes and applies it with a minimum amount of loss.**
- **Water is applied in the form of sprays sometimes simulating natural rainfall.**
- **The difference is that this rainfall can be controlled in duration and intensity.**
- **If well planned, designed, and operated, it can be used in sloping land to reduce erosion where other systems are not possible.**

# **ADAPTABILITY OF SPRINKLER IRRIGATION SYSTEM**

- IT IS SUITABLE FOR MOST ROW, FIELD, AND TREE CROPS.**
- WATER CAN BE SPRAYED OVER AND UNDER THE CROP CANOPY.**
- ADAPTABLE TO ANY FARMABLE SLOPE WHETHER UNIFORM OR UNDULATING, WHICH IS ONLY SUBJECT TO LIMITATIONS IMPOSED BY LAND USE CAPABILITY AND ECONOMICS.**
- PERIODIC-MOVE SYSTEMS ARE WELL SUITED FOR IRRIGATION IN AREAS WHERE THE CROP-SOIL-CLIMATE SITUATION**
- DOESN'T REQUIRE IRRIGATION MORE OFTEN THAN EVERY 5 – 6 DAYS.**

**Soils with low Water Holding Capacity (WHC) and shallow-rooted crops require light and frequent irrigation. For these fixed or continuously moving systems are suitable.**

**Fixed systems can also be designed and operated for frost and freeze protection, blossom delay and crop cooling.**



**Salinity Problems: under low humidity crops may absorb toxic amount of salts from irrigation water falling on the leaves.**

**Certain water are corrosive to metal pipes typically used in many sprinkle irrigation system.**

**Sprinkling is not well adapted to soils having an intake rate of less than 3 mm hour<sup>-1</sup>.**

**Extremely high temperature and windy conditions are unfavourable for sprinkle irrigation system.**

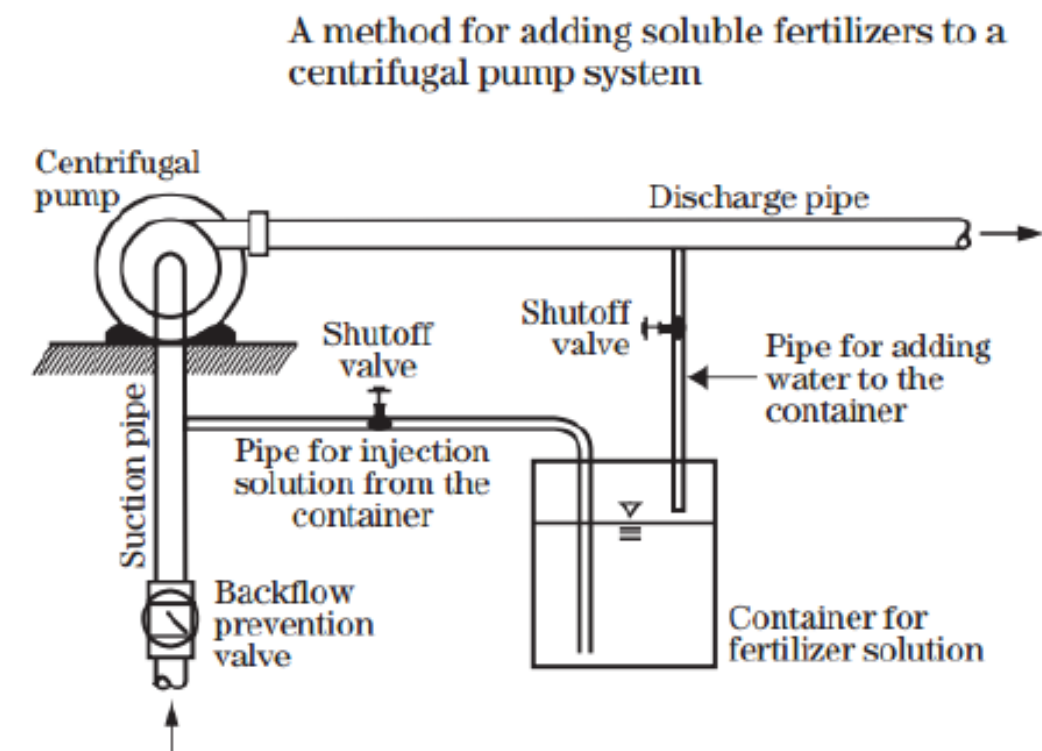
**Both initial and pumping costs for sprinkle irrigation system are higher than for surface irrigation system.**

# Special Uses:

## Application of fertilizers and soil amendments:

- Many liquid, dry and liquid suspension materials are suitable, subject to convenience and cost of desired nutrients.
- Commonly used materials for sprinkler system: urea- ammonium nitrate solution, ammonium nitrate, calcium and potassium nitrate.
- Fertilizers should be applied in batch methods.
- Order of metal susceptibility to corrosion.

- Galvanized steel
- Phosphobronze
- Yellow brass
- Aluminium
- Stainless steel





# Special Uses:

## Frost Protection

### Bloom Delay:

- In early spring, when temperatures are cool, blossoming is delayed; however, in **above normal spring temperature** bud development accelerates and **trees blossom early**.
- An early bud development, followed by cold spell has serious freeze damage potential.
- So, by sprinkling water **blossoming can be delayed** by **evaporative cooling** (up to 80% of the damage from early spring freezes can be prevented).

# Special Uses:

## Microclimate Control:

- Crop and soil cooling can be provided by sprinkler irrigation.
- **Small amount of water applied intermittently** to cool air and plant to raise the humidity and in theory, to improve production quality and yield.
- Water sprayed on plant surfaces reduce the transpiration rate, thus by letting the plant to function normally even on a hot afternoon.



**THANK YOU**