

Method of Irrigation

Irrigation:

Water is an essential natural recourse for the survival of mankind and all the form of life on the living planet. In spite of being renewable recourses it is scarce also. Plenty of irrigation water availability is key requisite for assured crop production.

Irrigation comes from the Latin for "moist" or "wet," but it means the purposeful wetting of something. We wouldn't really say that a storm provides irrigation (unless we were poetically trying to personify the storm). Irrigation systems are often complex combinations of canals, channels, and hoses.

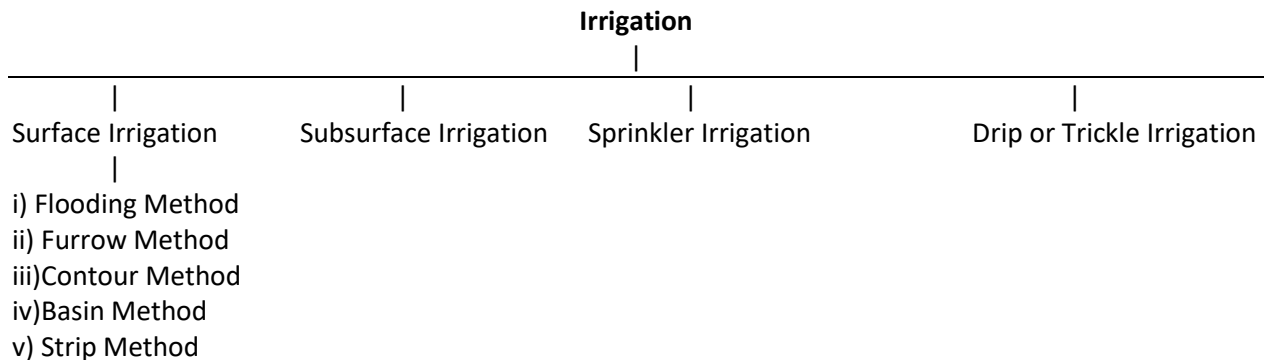
Simply, irrigation can be started as artificial application of water to the soil for crop growth and development. The application of water to plants is made naturally through rain fall and artificially through irrigation.

Importance of Irrigation:

The importance of irrigation can be explained in the following points:

1. To add moisture deficit in soil.
2. To maintain the soil temperature.
3. To regulate the appropriate salt balance in soil.
4. To soften the hard pans formed due to tillage operations.
5. To facilitate easy penetration of plant roots.
6. To maintain ambient temperature for biological activity inside soil.

Method of Irrigation:



Sprinkler Irrigation:

Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground.

- 1-Suitable crops
- 2-Suitable slopes
- 3-Suitable soils
- 4-Suitable irrigation water

Components of Sprinkler Irrigation system:

The following components are used in Sprinkler Irrigation system.

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|--------------------------|-----------|
| 1. Pumping Unit | 6. Valves |
| 2. Sub main and laterals | 7. Bends |
| 3. Couplers and union | 8. Plugs |
| 4. Sprinkler head | 9. Risers |
| 5. Nozzle | |

Response of different crops to Sprinkler Irrigation and water economy

Crops	Water saving %	Yield increase,%
Bajra	55	18
Barely	54	16
Bhindi	27	22
Cabbage	38	03
Cauliflower	34	11
Chilies	32	23
Cotton	36	50
Cowpea	18	02
Maize	40	35
Onion	32	22
Potato	45	03
Wheat	34	24

Advantages of sprinkler irrigation system:

1. Elimination of the field irrigation channels for conveyance, there for no conveyance, well as evaporation and seepage loss.
2. Suitable to all types of soil except heavy clay.
3. Water saving up to 35% - 50 %.
4. Suitable for irrigated crops where the plant population per unit area is very high. It is most suitable for cereals and vegetable crops.
5. Water saving as the quantity of water is kept nearly equal to rate of infiltration thus chances of runoff, deep percolation and undue evaporation is zero.
6. Closer control of water application, convenient for giving light and frequent irrigation and also help full in achieving higher water application efficiency.
7. Saves land as no bunds etc. are required.
8. Areas located a higher elevation than the source can also be irrigated successfully.
9. Also permits possibility of using soluble fertilizers and chemicals along with irrigation water.
10. Less problem of clogging of sprinkler nozzles due to sediment laden water.

Common of Sprinkler Issues:

1. Head replacements
2. Timer replacements
3. Broken pipes
4. Valve leaks
5. Faulty wiring
6. Pump and well repair

Drip System:

Drip irrigation refers to application of water in small quantity at the rate of mostly less than 12 lph (liter per hour) as drops to the root zone of the plants through a network of plastic pipe fitted with emitters. Drip irrigation in its present form has become compatible and successful with plastics that are durable and easily moulded into a variety and complexity of shapes for pipe and emitters.

There are two main types of drip irrigation systems:

- 1- Surface
- 2-Sub-surface

Major Components of Drip Irrigation System:

1. Pump station
2. Control valves
3. Filtration system
4. Fertilizer tank/venturi

5. Mainlines, sub mains and laterals

Merits of drip irrigation:

1. Increased water use efficiency.
2. Enhanced crop yield and less possibility of soil salinization.
3. Uniform and better quality of the produce.
4. Efficient and economic use of fertilizer along with irrigation.
5. Less weed growth as the crop rooting zone only is irrigated.
6. Avoidance of leaf burn due to saline soil.
7. Low energy requirement and i.e., labour saving.

Demerits of drip irrigation:

1. The installation process needs time. Sometimes may need court approval in some lands.
2. Sun heat affects tubes, sometimes they get broken for excessive heat production.
3. Plastic tubes affect soils fertility. Sun degrades plastic sometimes and that affect soil and fertilizers too.

REFERENCES:

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2.	Irrigation Engineering	Sonelal Sharma