SPRINKLER IRRIGATION METHOD

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Sprinkler Irrigation Method:

Sprinkler irrigation is the method of applying water in a controlled manner in a way similar to rainfall. The water is distributed through a network that may consist of pumps, valves, pipes, and sprinklers. It is also known as a **water sprinkler** or simply a **sprinkler method.**

Components of Sprinkler System:

The components of portable sprinkler system are as under.

Pumping Unit: A high speed centrifugal or turbine pump can be used for operating sprinkler irrigation for individual fields. The water is pumped under pressure to the fields. The pressure forces the water through sprinklers or through perforations or nozzles in pipelines and then forms a spray.

Pipes: Mains/submains and laterals: The tubings consist of mainline, submanins and laterals. Main line conveys water from the source and distributes it to the submains and then it distributes water to the nozzles.

Couplers: Couplers are used for connecting two pipes and uncoupling quickly and easily.

Nozzles: Nozzle or sprinkler head distribute water uniformly over the field without runoff or excessive loss due to deep percolation. Different types of sprinklers are available. They are either rotating or fixed type. The rotating type can be adapted for a wide range of application rates and head at the sprinkler.

Operation of Sprinkler System:

(1) The perpendicular pipes, having rotating nozzles on top, are joined to the main pipeline at regular intervals.

(2) When water is pressurized through the main pipe it escapes from the rotating nozzles. It gets sprinkled on the crop.

(3) In sprinkler or overhead irrigation, water is piped to one more central locations within the field and distributed by overhead high pressure sprinklers.

(4) The rotating sprinkler or nozzle turns slowly and gives water spray in a circle.

(5) There are two distinct types of nozzles fixed type and rotating type. Fixed type nozzles spray the water in one direction while rotating sprinkler or nozzle turns slowly and gives water spray in a circle.

Advantages:

(1) It is a device used to irrigate agricultural crops, lawns, landscapes, golf courses, and other areas.

(2) This saves a considerable amount of water in comparison with any surface method of irrigation.

(3) They are also used for cooling and for the control of airborne dust.

(4) Irrigation sprinklers can be used for residential, industrial, and agricultural usage.

(5) It is useful on uneven land where sufficient water is not available as well as on sandy soil.

(6) Sprinkler irrigation method can be used under sandy soil condition.

(7) If land is slopy or undulating, sprinkler system does not need land leveling. It can also be successfully used on slope land. In fact, land leveling takes away the top soil which has all the fertility. Once this top soil is removed, it takes a long time and effort to restore the fertility.

(8) Sprinkler system, if properly designed, can provide very high uniformity and irrigation efficiencies than any surface method of irrigation.

(9) No land is wasted as bunds, channels and consequently putting the land to optimum productivity of crops.

(10) Conveyance loses with surface irrigation ranges from 15 to 20 percent in well irrigated areas, while in this method water lose is very limited.

(11) Saving of water ranges from 25 to 50 percent as per the different crops.

(12) In most of the surface methods of irrigation, water logging is a problem due to over irrigation which creates a serious drainage problem, particularly in heavy soils. This problem does not exist in the sprinkler system.

(13) Light soils are better irrigated by sprinklers than surface method as frequent and small applications of water can be applied readily by sprinkler systems.

(14) Compared to any method of irrigation, sprinkler system gives a far better germination, thereby assuring a higher output of crop.

(15) Less pests due to constant washing of leaves.

(16) Water soluble fertilizers can be applied through sprinkles

(I) No extra labour involved as in manual application
(II) Fertilizer is applied uniformly without waste.
(III) More split doses of fertilizers can be applied, thus obtaining better response from the crops.

Disadvantages or Limitations of Sprinkler Irrigation System:

(1) **High initial cost:** Initial cost of Sprinkler Irrigation System is higher than any other surface irrigation methods..

(2) **High operating cost:** This system has high operating system.

(3) **Wind Drift:** If the wind speed is more than 15 km per hour, than it causes uneven distribution of water.

(4) **High Atmospheric Temperature:** If the atmospheric temperature is higher than 35^0 C, than it causes great water loss due to higher ET.

(5) A stable water supply is needed.

(6) Saline water may cause problem.

(7) Water must be free from sand, debris and large amount of salt.

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