SPRINKLER IRRIGATION

- In sprinkler irrigation, water is delivered through a pressurized pipe network to sprinklers nozzles or jets which spray the water into the air.
- To fall to the soil in an artificial "rain". The basic components of any sprinkler systems are : a water source. a pump to pressurize the water.
- A pipe network to distribute the water throughout the field. sprinklers to spray the water over the ground, and valves to control the flow of water.
- The sprinklers when properly spaced give a relatively uniform application of water over the irrigated area.

Suitability and Limitations

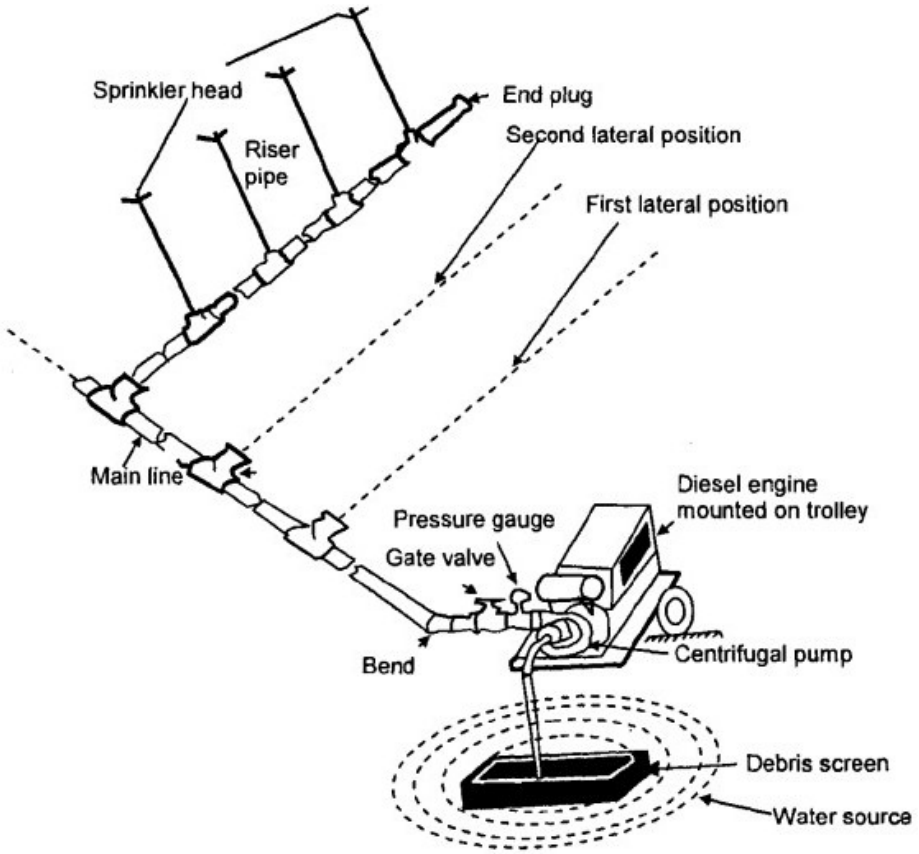
With regards to crops, soils, and topography nearly all crops can be irrigated with some type of sprinkler system though the characteristics of the crop especially the height, must be considered in system selection.

Sprinklers are sometimes used to germinate seed and establish ground cover for crops like lettuce alfalfa and sod.

The light frequent applications that are desirable for this purpose are easily achieved with some sprinkler systems.

Sprinklers are applicable to soils that are too shallow to permit surface shaping or too variable for efficient surface irrigation.

In general, sprinklers can be used on any topography that can be formed. Land leveling is not normally required.



Components of

Sprinkler irrigation System

- Sprinkler systems are usually fthere are some exceptions) designed to apply water at a lower rate than the soil infiltration rate so that the amount of water infiltrated at any point depends upon the application rate and time of application but not the soil infiltration rate.

General Classification of Sprinkler Systems

Sprinkler systems are classified into the following two major types on the basis of the arrangement for spraying irrigation water.

(a) Rotating head or revolving sprinkler system.

(b) Perforated pipe system.

Components of Sprinkler Irrigation System

Sprinkler system usually consists of the following components :

(a) A pump unit

(b) Tubings-main/sub-mains and laterals

(c) Couplers

(d) Sprinker head

(e) Other accessories such as valves, bends, plugs and risers.

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With regards to labour and energy considerations, it has been observed that labour requirements vary depending on the degree of automation and mechanization of the equipment used.

Hand-move systems require the least degree of skill, but the greatest amount of labor.

Advantages of Sprinkler Irrigation

The followings are the advantages of sprinkler irrigation :

(a) Elimination of the channels for conveyance, therefore no conveyance loss.

(b) Suitable to all types of soil except heavy clay, suitable for irrigating crops where the plant population per unit area is very high. It is most suitable for oil seeds and other cereal and vegetable crops.

(c) Water saving, closer control of water application convenient for giving light and frequent irrigation and higher water application efficiency.

(d) Increase in yield.

(e) Mobility of system.

(f) May also be used for undulating area, saves land as no bunds etc. are required, areas located at a higher elevation than the source can be irrigated.

(g) Influences greater conducive micro-climate.

(h) Possibility of using soluble fertilizers and chemicals.

(i) Less problem of clogging of sprinkler nozzles due to sediment laden water

Capacity of Sprinkler System

The capacity of the sprinkler system may be calculated by the formula :

$$Q = 2780 \times \frac{A \times d}{F \times H \times E}$$

Where,

Q = Discharge capacity of the pump, liter/second,

A = Area to be irrigated, hectares,

d = Net depth of water application, cm,

F = Number of days allowed for the completion of one irrigation,

H = Number of actual operation hours per day, and

E = Water Application Efficiency in