

SURFACE IRRIGATION METHODS
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Irrigation: The artificial application of water to soil to assist in the production of crops, especially during stress periods.

Advantages:

- (1) Irrigation plays vital role for the vegetative and reproductive growth of the crop in winter & summer season crop.
- (2) It helps the growth of crops during the period of inadequate rainfall.
- (3) Under low rainfall condition, irrigation is essential for the completion of Life Cycle.
- (4) It improves the yields of crops which mean more income for the farmers.
- (5) Irrigation makes it possible to grow cash crops which give good returns to the cultivators.

Adverse Impacts of Irrigation:

- (1) Reduced river flow.
- (2) Increased groundwater recharge, waterlogging, soil salinity.
- (3) Reduced downstream river water quality.
- (4) Affected downstream water users.
- (5) Lost land use opportunities.
- (6) Groundwater mining with wells, land subsidence.
- (7) Reduced downstream drainage and groundwater quality.
- (8)

Methods of Irrigation: There are several methods of the irrigation in India. The main methods are as under.

- (i) Surface Method
- (ii) Subsurface Irrigation Method
- (iii) Sprinkler Irrigation
- (iv) Drip Irrigation Method

- (i) **Surface Method:** An irrigation method wherein water is applied directly on the soil surface from a channel located on the upper side of the field. The water spreads over the fields by gravity flow.

Types of Surface Methods:

- (1) Flood Method
- (2) Check Basin Method
- (3) Basin Method
- (4) Border Strip Method
- (5) Furrow Method

(I) Flood Method:

- (1) This method is useful in case of much more water availability.
- (2) In this method water is directly released in the field.
- (3) This method is useful under Lowland rice condition.
- (4) Minimum Labour required in this irrigation method.
- (5) There is no layout required in this method.
- (6) All field is available for the cultivation.

(II) Check Basin Method:

- (1) In this method, whole the field is divided into different small plots surrounded by bunds.
- (2) This method is useful for the close growing crops like wheat, groundnut, finger millet etc.
- (3) Water from the main channel supplied to the field channels one after another.
- (4) The size is ranges from 4m X 3m to 6m X 5m as per the stream size and field size.
- (5) In this method, water can be applied uniformly even with small stream size of 2 l/second.
- (6) More labour is required for the layout of this method.
- (7) Some land is occupied under bunds, irrigation channels etc. Hence, whole field is not available for the cultivation.

(III) Basin Method:

- (1) This method is suitable for the fruit crops.
- (2) In this method, basin around the trees are irrigated.
- (3) Basins are generally round or square in shape.
- (4) The basins are small with the young trees their size is increased with age of the tree.
- (5) Basins are connected with the irrigation channels.

- (6) Water is released through main channel to irrigation channels through which water reaches in the basins.
- (7) More labours are required for the layout of this method.
- (8) Some land is occupied under bunds, irrigation channels etc.

(IV) Border Strip Method:

- (1) In this method, whole field is divided into long, narrow strips.
- (2) The length of the strips ranges from 30 to 300 m and width from 3 to 15 m.
- (3) Water from the channel is allowed into each strip at a time.
- (4) This method is suitable for close growing crops and medium to heavy soils.
- (5) If the strip is very long, water cannot equally reaches to the end of the field
- (6) This method is not suitable for the light sandy soils due to the deep percolation water lose.
- (7) In compare to check basin method, labour requirement is less in this method for layout and irrigation.

(V) Furrow Method:

- (1) Furrow method is suitable for the crops grown in ridge and furrow method.
- (2) This irrigation method is suitable for potato, tomato, brinjal, sorghum, maize, cotton, sugarcane etc.
- (3) The size and shape of the furrow depends upon the stream size and crop also. At a time irrigation is provided in 3 to 5 furrows.
- (4) In vegetable crops, 5 to 6 metre length short furrows are formed. 5 to 6 furrows grouped into a basin.
- (6) For the close growing crops under water deficient condition, life saving irrigation provided to groundnut, wheat etc. through shallow furrows which are called corrugations.

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