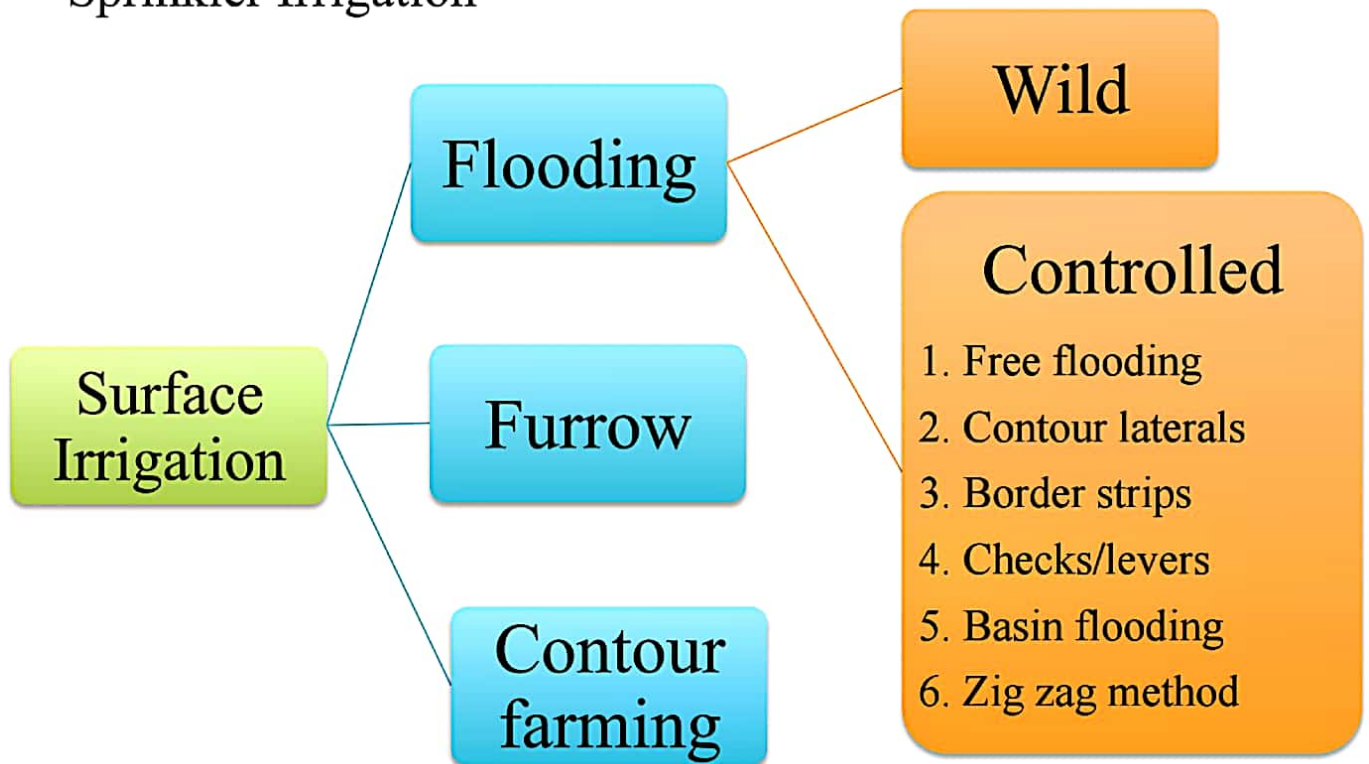


Methods of Irrigation

- Surface Irrigation
- Sub surface Irrigation
- Sprinkler Irrigation



Factors affecting choice of method of irrigation

- Soil characteristics of land to be irrigated
- Topography – slope, roughness of surface
- Size of stream supplying irrigation water
- Available water supplies
- Rate of infiltration of soils
- Depth of root zone of plants
- Depth of water table
- Possible erosion hazard
- Amount of water to be applied during each irrigation

Select method of irrigation should fulfill following objectives

- Adequate amount of water is stored in the root zone of plants
- Light irrigation uniform application of 6cm
- Heavy irrigation, uniform depth of water application of 15 to 20cm should be possible.
- Minimum soil erosion.
- Reduce wastage of water
- Reuse of water is made possible
- Minimum land (of fields) is used for irrigation systems
- Method properly fits the boundary of land to be irrigated

Surface Irrigation: Wild Flooding

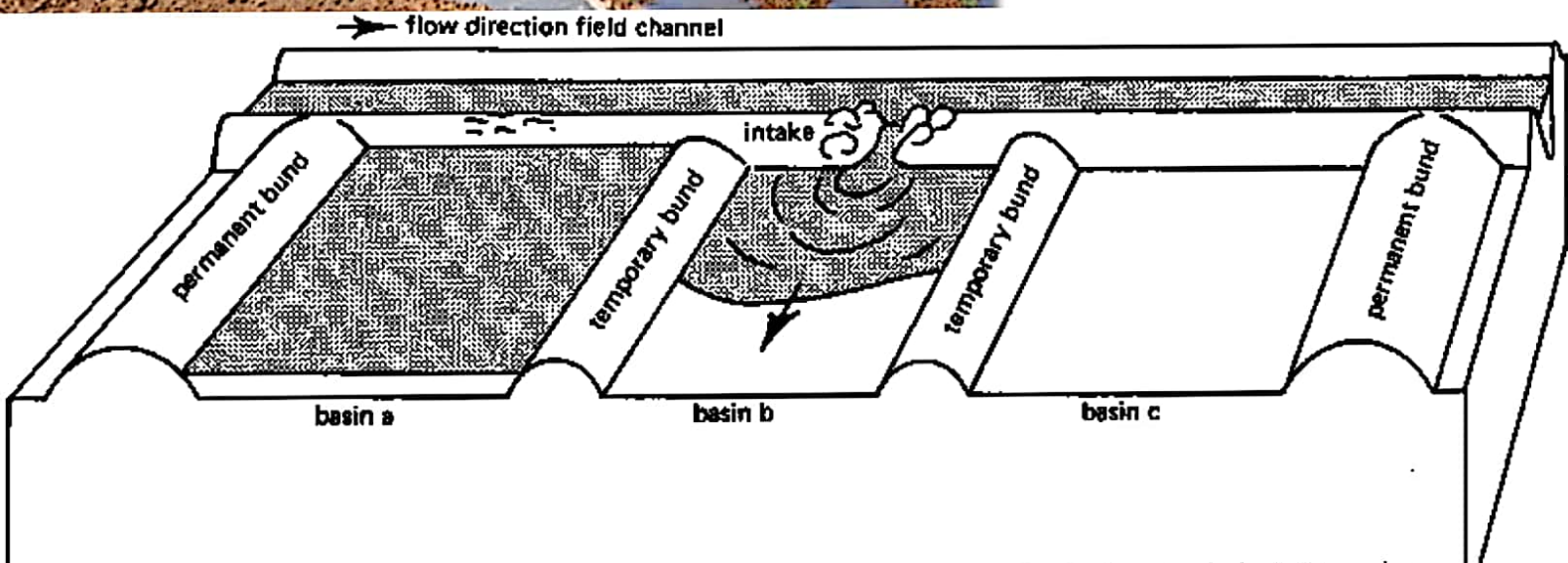
- a.k.a Uncontrolled flooding
- Water is applied by spreading it over land, without any preparation of land (to guide the flow).
- During high stream flow, water from source is allowed on land and is to made to spread along natural slope.
- Suitable for smooth, flat land
- Wastage of water is high
- Practised in areas with abundance and irrigation is less expensive.

Controlled Flooding

- Here quantity of irrigation water is controlled.
- Prior preparation of land is essential.
- Free Flooding
- Commonly adopted in India
- Field is divided in to small size plots having horizontal surfaces
- Water is fed at the higher end and made to flow till the end and then cut off.
- Size of plot depends on the porosity.

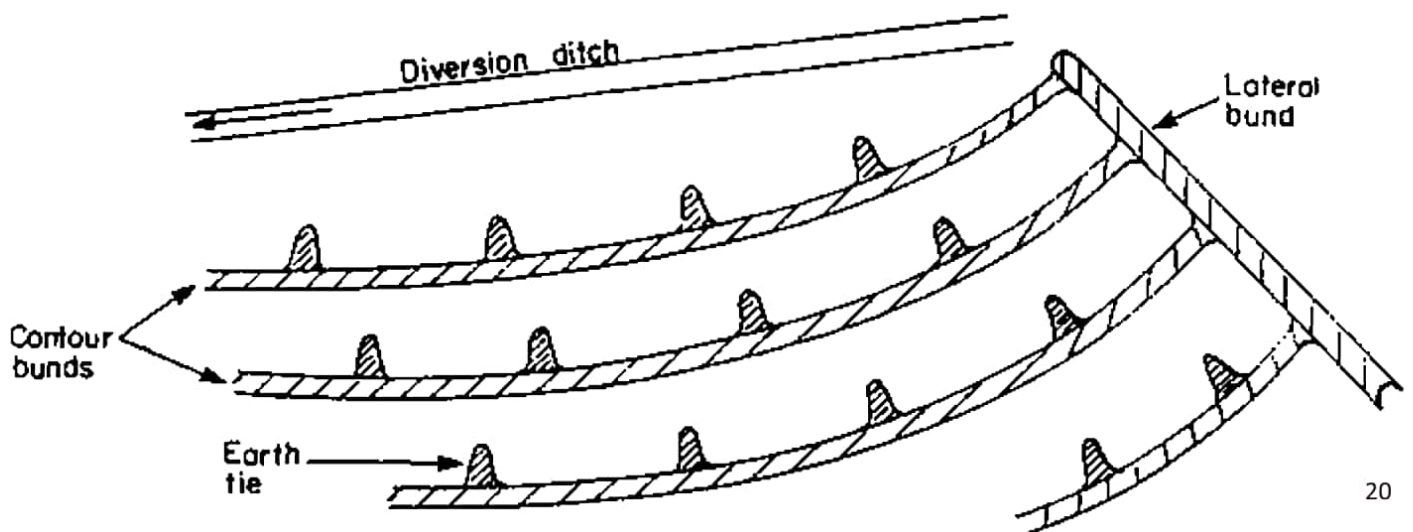


Free flooding method



Contour Laterals

- Practised when terrain is steep
- Laterals are aligned along contour lines
- Laterals are aligned perpendicular to contour lines, land on both sides of channel can be irrigated



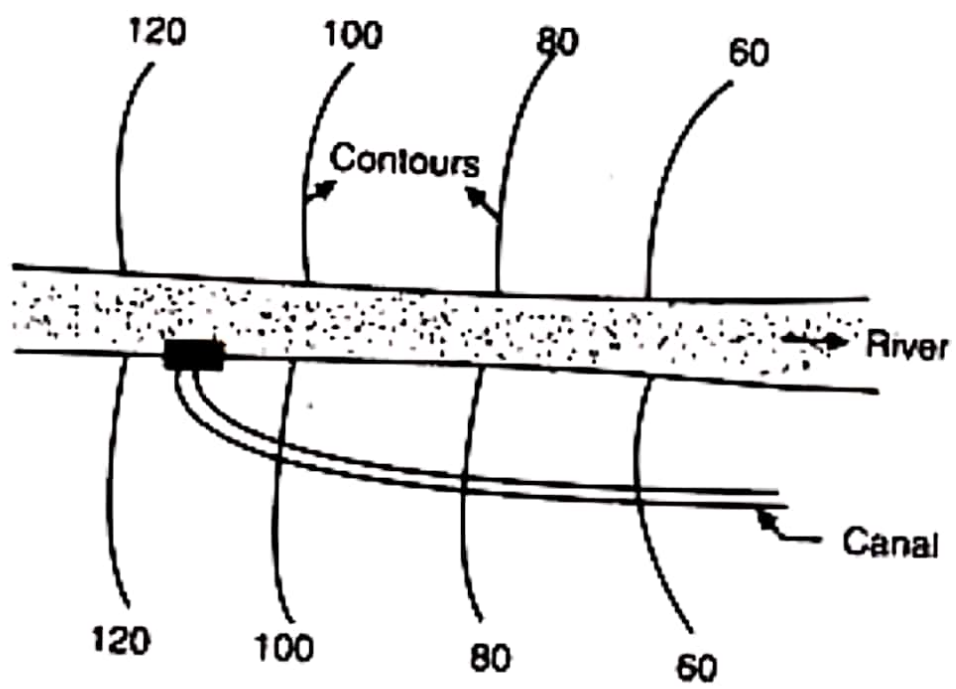


Fig. 8.5. Side slope channel

Border strip method

- Land is divided in to narrow strips (width about 20m & length about 200-300m), separated by borders/levees.
- Each strip (of gentle slope) is irrigated independently.
- Flow of water is sheet like, ($Q = 14$ to 28 litre/s)
- Slope is lengthwise between 0.5 to 1.5%
- Initial 6 to 12m length is made level for uniform spreading of water
- Length of strips depends on infiltration rate of soil, slope and size of irrigation stream.
- Longitudinal Slope depends on type of soil.
- Steeper: soil erosion, insufficient at upper reaches
- Flat: slow movement of water, percolation losses, insufficient at lower reaches

Type of soil	Length of strip (m)	Slope (%)
Sandy and sandy loam	60-120	0.25 to 0.60
Medium loam soils	100-120	0.2 to 0.40
Clay loam & clay soils	150-300	0.05 to 0.20

Check Flooding

- Similar to Ordinary flooding.
- Comparatively large stream supplies water w.r.t plot size
- Water is controlled by surrounding the check area with low and flat levees.
- Surrounded by levee- width: 2-3m (at bottom) and height: 15-30 cm.
- The check is filled with water at a fairly high rate and allowed to stand until the water infiltrates
- The confined plot area varies from 0.2 to 0.8 hectares.
- If the ground has slope, then levees follow the contours.
- Suitable for low as well as high intake soils and for rice or other crops which can withstand temporary flooding.

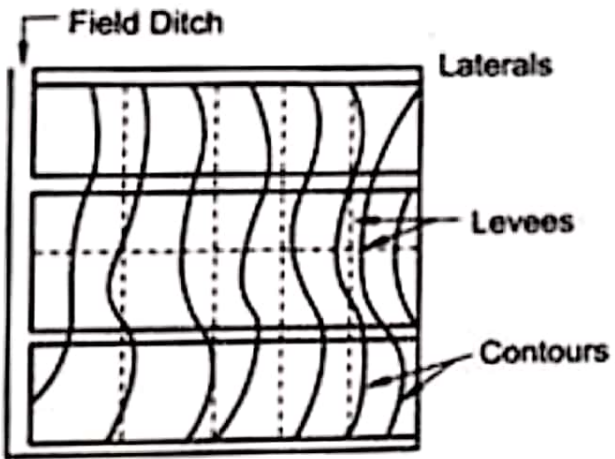


Fig. 6.3. Rectangular check

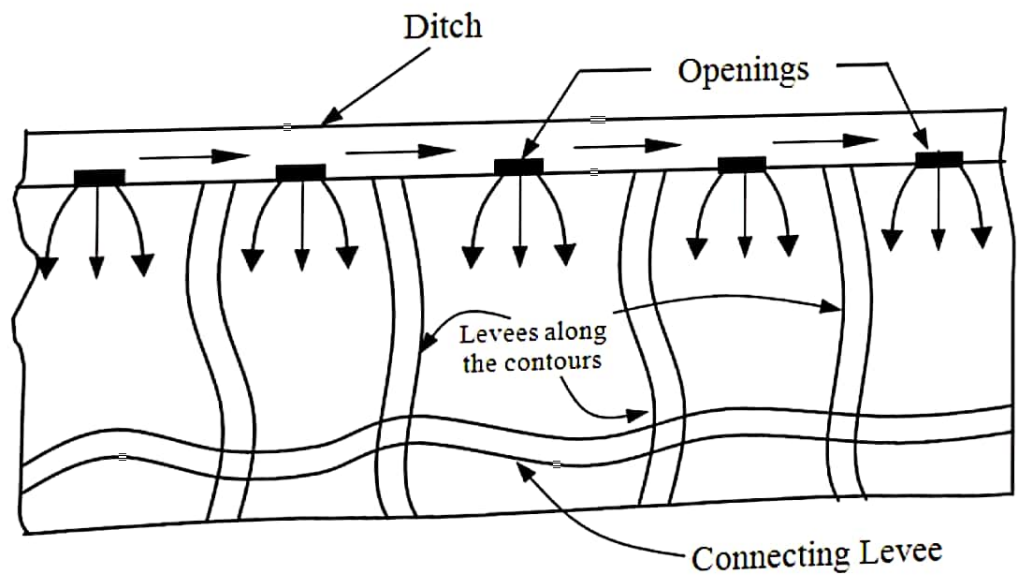


Fig: Check flooding (Plan view)