



IRRIGATION METHODS IN INDIA

● IRRIGATION METHODS

- a) **Surface Irrigation:** Just flooding water. About 90% of the irrigated areas in the world are by this method.
- b) **Sprinkler Irrigation:** Applying water under pressure. About 5 % of the irrigated areas are by this method.
- c) **Drip or Trickle Irrigation:** Applying water slowly to the soil ideally at the same rate with crop consumption.
- d) **Sub-Surface Irrigation:** Flooding water underground and allowing it to come up by capillarity to crop roots.

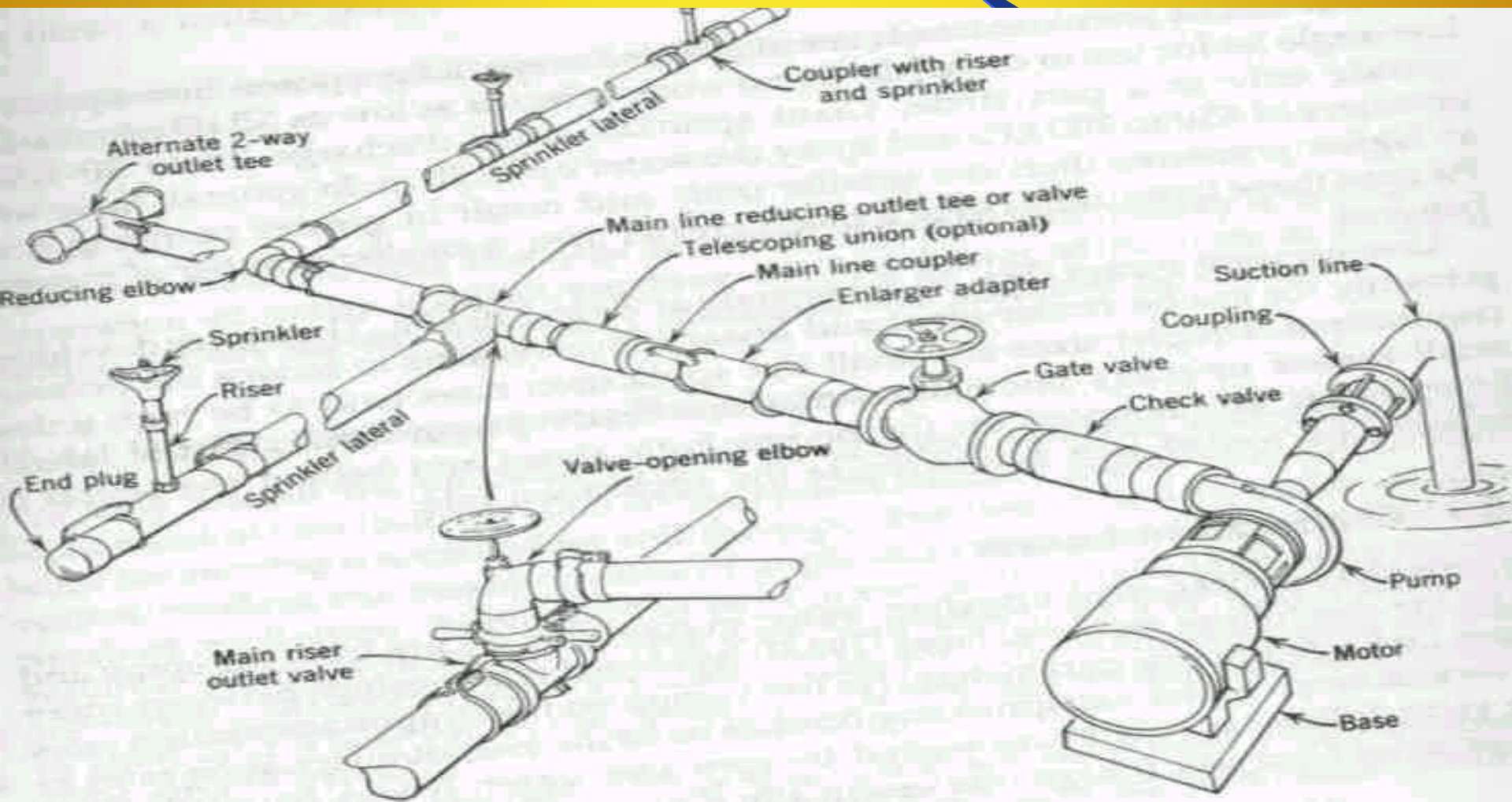
SURFACE IRRIGATION

- Water is applied to the field in either the controlled or uncontrolled manner.
- **Controlled:** Water is applied from the head ditch and guided by corrugations, furrows, borders, or ridges.
- **Uncontrolled:** Wild flooding.
- Surface irrigation is entirely practised where water is abundant. The low initial cost of development is later offset by high labour cost of applying water. There are deep percolation, runoff and drainage problems

SPRINKLER IRRIGATION

- **Introduction:** The sprinkler system is ideal in areas where water is scarce.
- A Sprinkler system conveys water through pipes and applies it with a minimum amount of losses.
- Water is applied in form of sprays sometimes simulating natural rainfall.
- The difference is that this rainfall can be controlled in duration and intensity.
- If well planned, designed and operated, it can be used in sloping land to reduce erosion where other systems are not possible.

Components of a Sprinkler Irrigation System



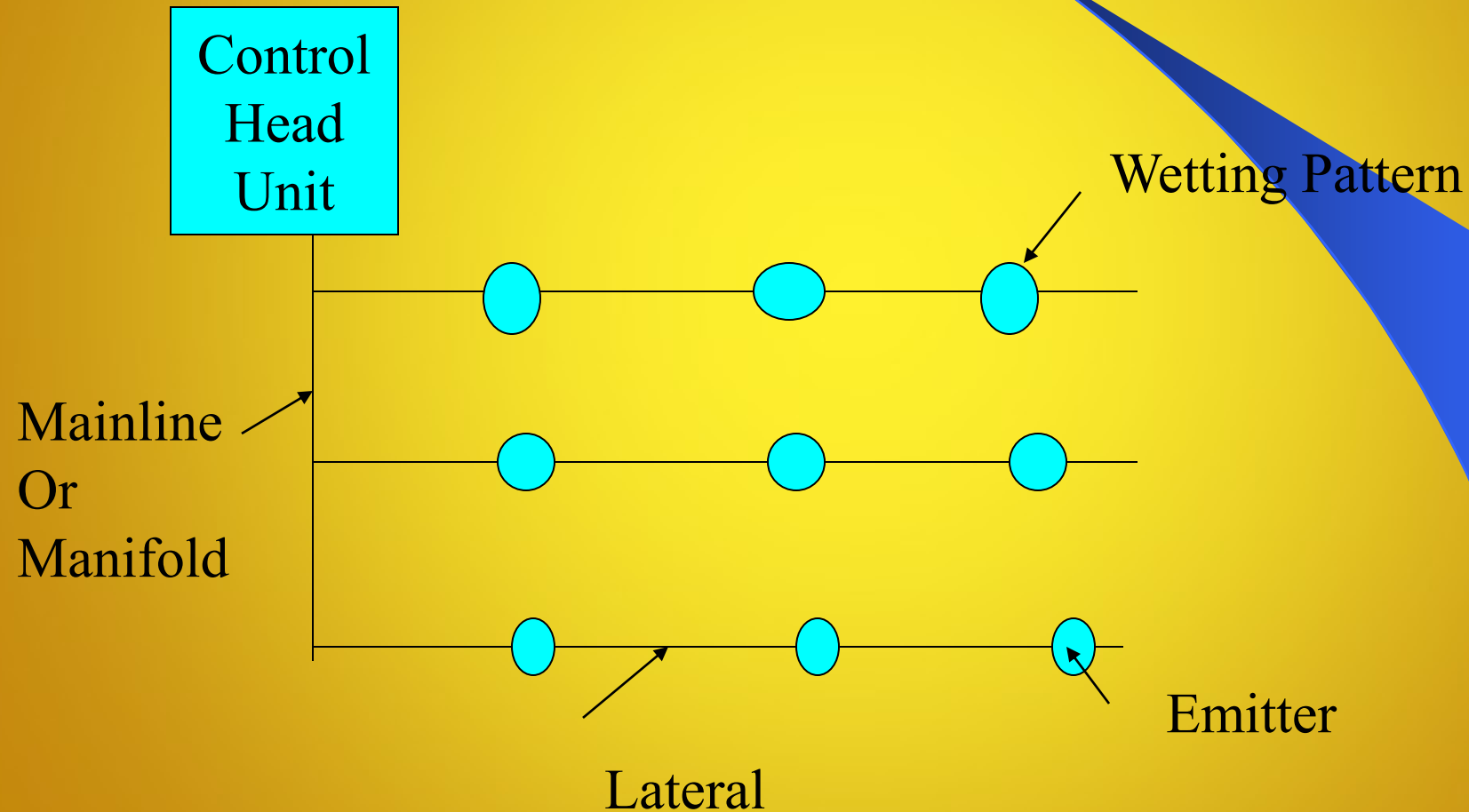
Design of Sprinkler Irrigation System

- **Objectives and Procedures**
- Provide Sufficient Flow Capacity to meet the Irrigation Demand
- Ensure that the Least Irrigated Plant receives adequate Water
- Ensure Uniform Distribution of Water.

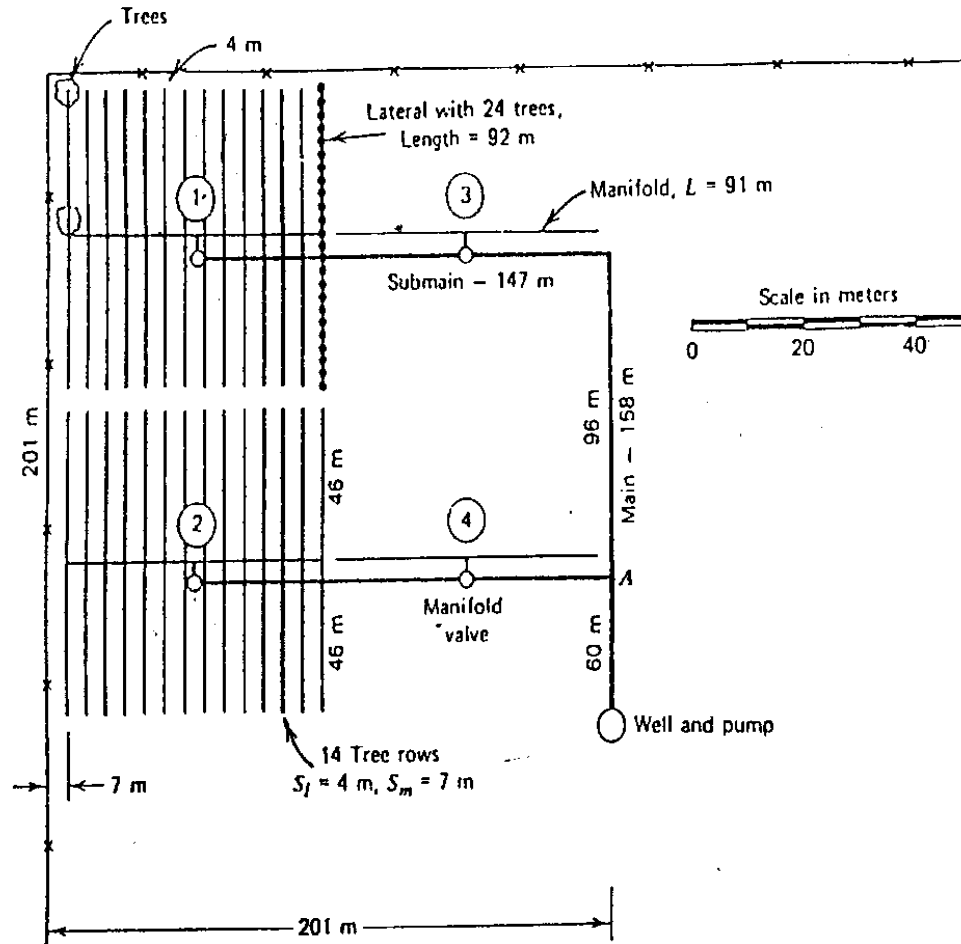
DRIP OR TRICKLE IRRIGATION

- **Introduction:** In this irrigation system:
- i) Water is applied directly to the crop i.e. entire field is not wetted.
- ii) Water is conserved
- (iii) Weeds are controlled because only the places getting water can grow weeds.
- (iv) There is a low pressure system.
- (v) There is a slow rate of water application somewhat matching the consumptive use. Application rate can be as low as 1 - 12 l/hr.
- (vi) There is reduced evaporation, only potential transpiration is considered.
- (vii) There is no need for a drainage system.

Components of a Drip Irrigation System



LAYOUT OF THE TRICKLE IRRIGATION SYSTEM



Trickle system layout for a 4.05-ha (10-ac) orchard with a well in the center of a 16.2-ha (40-ac) square field.

SUB-SURFACE IRRIGATION

- **Applied** in places where natural soil and topographic condition favor water application to the soil under the surface, a practice called sub-surface irrigation. These conditions include:
 - a) Impervious layer at 15 cm depth or more
 - b) Previous soil underlying
 - c) Uniform topographic condition
 - d) Moderate slopes.