Irrigation scheduling

- Irrigation scheduling helps eliminate or reduce instances where too little or too much water is applied to crops.
- Scheduling is performed by all growers in one way or another.
- However, proper irrigation scheduling involves fine-tuning the time and amount of water applied to crops based on the water content in the crop root zone, the amount of water consumed by the crop since it was last irrigated, and crop development stage.
- Direct measurement of soil moisture content is among the most useful methods for irrigation scheduling.

Good irrigation scheduling requires knowledge of:

- Crop water demand at different growth cycles
- Moisture content of the soil and soil water capacity
- Weather conditions.

Soil capacity

- **Soil capacity**, which is the ability of the soil to hold water between irrigation or precipitation events, is another important factor.
- Determinants of soil capacity include soil depth, ratios of different soil particles making up the soil, soil porosity, and soil water tension.

Climatic conditions

The prevailing **climatic conditions**, such as average ambient temperature, intensity of solar radiation, humidity, and windspeed also affect both the moisture retained in the soil and the speed by which plants lose water through transpiration.

Accurate monitoring

- Accurate monitoring of water used in irrigation is an essential part of irrigation scheduling and helps reach optimal performance, saving water while enhancing yields.
- Accurate readings can be obtained through different direct measurement methods available for pipes and closed conduits
- Measurement of energy used by irrigation pumps
- End-pressure measurements in sprinkler irrigation
- Elevation differences in irrigation reservoirs or tanks
- Measurement of irrigation time and size of irrigation delivery system.

IRRIGATION METHODS

Once the quantitative and temporal characteristics of optimal water demand have been determined, a method that can make such water available in the most effective way should be selected. There are three main irrigation methods, namely:

1. Surface (or gravity) irrigation
2. Sprinkler irrigation
3. Drip irrigation.

Water losses be control:

The following are the measures that are generally taken to control the water losses from the reservoir.

1. Measure to Reduce Evaporation Loss

a) The reservoir should be constructed of less surface area and more depth.

b) The reservoir basin should be surrounded by plantation or forest area so that cooler environment exists within the reservoir area.

c) Certain chemical like cetyl alcohol is spread over the reservoir surface. It forms a thin film on water surface reducing evaporation.

2. Measure to Reduce Absorption Loss

a) The weeds and plants at the periphery of the reservoir should be removed completely.

b) The weeds from the surface of the reservoir should be removed.

3. Measure to Reduce Percolation Loss

a) Geological investigations should be carried out to locate the zones of pervious formations, cracks and fissures in the bed and periphery of the reservoir basin.

b) Suitable treatments should be adopted to stop the leakage of water through these zones.

c) Soil stabilization methods should be adopted if the basin is composed of permeable bed soil.

Water logging

- In agricultural land, when the soil pores within the root zone of the crops get saturated with the subsoil water, the air circulation within the soil pores gets totally stopped.
- This phenomenon is termed as water logging.
- The water logging makes the soil alkaline in character and the fertility of the land is totally destroyed and the yield of crop is reduced.

Effects of water logging

The following are the effects of water logging:

- Stabilization of soil
- Lack of aeration
- Fall of soil temperature
- Growth of weeds and aquatic plants
- Diseases of crops
- Difficulty in cultivation
- Restriction of root growth

Methods used for controlling water logging

The following measures may be taken to control water logging:

- Prevention of percolation from canals
- Prevention of percolation from reservoirs
- Control of intensity of irrigatioN

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