**LESSON FOR WEEK EIGHT (8) ENDING 31ST OCT, 2025.**

**SUBJECT**: AGRICULTURAL SCIENCE.

**TOPIC:** **IRRIGATION AND DRAINAGE**

***CLASS*** **SS2**

**DATE:** **28TH OCT, 2025**

Meaning of irrigation

This is the artificial application of water to the land to control soil moisture for agricultural purposes with the aim of increasing crop production. It is also artificial application of water to the soil to supplement insufficient rainfall. Irrigation is usually done when soil moisture becomes depleted.

**Aims of irrigation**

1. To add water to the soil in order to supply moisture for plant growth.
2. To ensure the survival of crops during drought.
3. To cool the soil and the atmosphere to favour plant growth
4. To make early planting possible.

**IMPORTANCE OF IRRIGATION ON CROP PRODUCTION**

1. Irrigation softens the soil for easy tillage operation.
2. It provides moisture in the soil for root absorption
3. It reduces the amount of salts accumulated in the top soil, which could be harmful to crops.
4. It cools the soil by reducing the soil temperature during dry season.
5. Increases crop productivity
6. It dissolves nutrients for plant growth.

**TYPES/METHOD OF IRRIGATION SYSTEM**.

A) **Surface irrigation**: This is the type of irrigation done through channel, flooding, contour ditch, furrow, basin etc. water from the river, dams or streams flows along the surface of the land to farm land. The most important condition for surface to be efficient is for the land to have a gentle slope to permit water to flow in the farm.

**ADVANTAGES OF SURFACE IRRIGATION.**

1. The amount of irrigation water can be controlled.
2. It is cheaper to construct and maintain
3. It increases the activities of microbes in the soil, etc.

**DISADVANTAGES OF SURFACE IRRIGATION**

1. It cannot be practiced on a hilly land
2. The volume of water, especially in flooding may be difficult to control.
3. Crops may not tolerate heavy flooding, etc.

B) Sub-surface irrigation: In this system, water s applied below the soil surface by maintaining an artificial water level at certain depth. This depends on the type of crop and the nature of soil. Perforated pipes are used to deliver water within the soil, the water gets to the roots of crops through capillary action.

**ADVANTAGES OF SUB-SURFACE IRRIGATION.**

1. It is possible to maintain water at optimum depth for crops.
2. It ensures low evaporation losses from soil.
3. It does not create obstruction in the farm, etc.

**DISADVANTAGES OF SUB-SURFACE IRRIGATION**

1. Water with a high salt content cannot be used.
2. It requires an expertise.
3. It is a bit expensive, etc.

C) **Overhead irrigation:** Here water is supplied to the farm land above the surface of the soil. Types of over-head irrigation are; sprinkler, drip, the use of watering cane.

1. **Sprinkler irrigation**: Pipes are laid on the surface of the farm land or under the surface of the ground. Water is pumped from the air to fall on the ground surface like rainfall, through nozzles under high pressure.

**ADVANTAGES OF SPRINKLER IRRIGATION**

1. The amount of water applied is regulated.
2. It is economical to use
3. It is suitable for high arid land, etc.

**DISADVANTAGES OF SPRINKLER IRRIGATION**

1. It is costly to operate.
2. High wind velocity may prevent distribution of water.
3. A stable water supply is required, etc.

2. **Drip irrigation**: In this system, plastic or metal pipes are lad on the farm along the crop rows. These pipes have holes called emitters at selected spacing to discharge water to the soil surface near the roots of crops.

**ADVANTAGES OF DRIP IRRIGATION**

1. It is very economical in the use of water.
2. It minimizes evapotranspiration.
3. It is most suitable for arid and semi- arid area, etc.

Disadvantages of drip irrigation

1. It is very expensive to maintain and install
2. It is not suitable for sloppy land
3. Water with high salt content cannot be used.

**PROBLEMS OF IRRIGATION SYSTEM.**

1. Inadequate water supply.
2. High cost of irrigation equipment
3. Disease causing organisms increases with increasing humidity
4. Excessive dissolution of salt in irrigated water prevents proper growth of crops.
5. It disturbs the free movement of farm machinery.
6. It gives room for the breeding of disease vectors like snail, etc.

**Drainage** is the artificial removal of excess water from the surface of the soil or root zone. It is aimed at creating a conducive soil moisture level for the growth of crops envisages in that particular farm.

**IMPORTANCE OF DRAINAGE/ REASONS OF DRAINAGE IN AGRICULTURE.**

1. It helps to reclaiming water-logged soil for crop production
2. It improves the soil structure, thereby improving the water-holding capacity of the soil
3. It improves soil aeration for good root respiration.
4. It gives suitable condition for the growth of soil microbes responsible for decomposition of soil organic matter which provides nutrients for plant growth.
5. It increases soil temperature
6. It reduces soil acidity
7. It increases crop production, etc.

**TYPES OF DRAINAGE SYSTEM**

A) **Surface drainage:** In this system, the excess water is removed from the surface of the land through open ditches or channels and lateral ditches and field drains.

**ADVANTAGES OF SURFACE DRAINAGE**

1. It is relatively easy to construct
2. It is cheaper than the sub-surface drainage.
3. It takes care of large volume of water especially in area of heavy rainfall, etc.

**DISADVANTAGES OF SURFACE DRAINAGE.**

1. It occupies good space that could have been used for planting.
2. Repairs and maintenance are expensive
3. They are prong to gull erosion
4. Mechanization is hindered
5. It increases the cost of production.

B) **Sub-surface or underground drainage system**: This is the orderly removal of excess water from the land, using tiles or moles or perforated pipes dun under the ground. These collect water and channel it away from the farm land.

**ADVANTAGES OF SUB-SURFACE DRAINAGE**

1. N obstruction of movement of machines and farmers
2. Prevent build-up of surface run-off which causes erosion
3. Recommended for areas where land is scarce as no land surface area is used
4. It is faster and more efficient

**DISADVANTAGES OF SUB-SURFACE DRAINAGE**

1. It is very expensive to operate
2. The construction and maintenance requires experienced engineers
3. It needs very deep excavation of the soil, etc.

**EVALUATION.**

1. Define irrigation.
2. State four importance of irrigation
3. List the types of irrigation system.
4. What is drainage
5. Briefly explain the two types of drainage.