

Irrigation and It's Types

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Introduction

Water is the most precious thing for human beings, animals and as well as plants also occurs on the planet earth. Without water there is no life on the earth. Water is a substance which is formed from two chemical elements which are hydrogen and oxygen. Water is tasteless odourless and colourless found in the liquid form. It is a major part of photosynthesis and also required for translocation of nutrients.

Definition

Artificial application of water to the soil with different methods for providing moisture which is essential to the plant growth with different methods is known as irrigation. One or two times application of water during prolonged drought to save dry land crops is referred to as supplemental irrigation or life saving irrigation.

Advantages of irrigation

- Irrigation provides the moisture to the soil.
- Irrigation plays a vital role in increasing food production.
- Proper irrigation prevents drought conditions which affect food production.
- Irrigation also reduces the wastage of water.
- Fertilizer can be applied through the irrigation.

History of irrigation

Irrigation was invented in Sumer, currently known as Iraq, near around 5,500 BC by the ancient Sumerians. Irrigation system was developed because of domestic use and saving the crops at the time of drought. There are many ancient civilizations that flourished in the valleys of great rivers - Nile valley of Egypt, Indus valley of India and Pakistan and Huang He valley of China.

Global Scenario

According to many archaeological investigations, there is evidence of irrigating barley crop in Mesopotamia, Egypt and Iran as far back as the 6th millennium BC. Remain three irrigation canals radiocarbon found by archaeologists dated from the 4th millennium BC, 3rd millennium BC and the 9th century BC.

Indian Scenario

The history of irrigation and its development in India can be traced back to prehistoric times. Irrigation is also defined in Vedas and Indian scriptures. There are many civilisations flourished on the bank of rivers and harnessed the water for sustenance of life. In the ancient time irrigation can be possible through wells, canals, tanks and dams which were beneficial to the community.

Methods of irrigation

There are mainly four types of methods of irrigation which are written below:

1. **Surface irrigation:** When the water is distributed or supplied over the soil surface by gravity is known as the surface irrigation. It is the most common irrigation technique which is used by most of the farmers in their field. It is also known as Flood irrigation.

Advantages:

- They have relatively low energy requirements in routine operations

- This type of irrigation technique can be developed at the farm level with minimum investment
 - They are less affected by climatic and water quality characteristics
2. **Subsurface irrigation/Subsoil Irrigation:** Water gradually wets the root zone by capillary movement through subterranean perforated pipes and deep ditches at 15-30 m intervals.
 3. **Sprinkler irrigation:** Sprinkler irrigation is also known as the Overhead irrigation. Application of irrigation water is similar to natural rainfall. Water is sprayed into the air through sprinklers. This type of irrigation system is mostly suitable for the row, field and tree crops.

Advantages:

- Water is applied in a consistent manner.
 - Water savings ranging from 25% to 50% for various crops.
 - Suitable for leaching salts from saline soils.
 - Land saving of 10% to 16%.
 - There is no risk of runoff or erosion.
4. **Drip irrigation:** Simcha Blass discovered drip irrigation in Israel, and the water flow rate per dripper is typically 1-4 lit/hr. and the water diffuses through the soil due to capillary action. The main pipeline, submains, laterals, and emitters are all part of it. Drip irrigation is also known as Trickle irrigation.

Advantages:

- No land levelling is required.
- It can save up to 70% of water and even more.
- Herbicides and fertilizers are applied to the crop by solubilising into the irrigation water, which is referred to as Herbigation (Herbicide+Irrigation) and Fertigation (Fertilizer application through irrigation).