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IRRIGATION

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Abstract: -

Irrigation is the artificial application of water to land to assist in crop production, accounting for roughly 70% of global freshwater withdrawals. Modernizing irrigation with drip and sprinkler systems increases water use efficiency (currently only 30-40% in many regions), reduces labor, and improves crop yields under climate change.

1. What is Irrigation?

Irrigation is the process of applying water to the crops artificially to fulfil their water requirements. Nutrients may also be provided to the crops through irrigation. The various sources of water for irrigation are wells, ponds, lakes, canals, tube-wells and even dams. Irrigation offers moisture required for growth and development, germination and other related functions.

The frequency, rate, amount and time of irrigation are different for different crops and also vary according to the types of soil and seasons. For example, summer crops require a higher amount of water as compared to winter crops.

Let us have a look at different types of irrigation and the methods used for irrigation.

2. Types of Irrigation

There are different types of irrigation practised for improving crop yield. These types of irrigation systems are practised based on the different types of soils, climates, crops and resources. The main types of irrigation followed by farmers include:

2.1 Surface Irrigation

In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity.

2.2 Localized Irrigation

In this system, water is applied to each plant through a network of pipes under low pressure.

2.3 Sprinkler Irrigation

Water is distributed from a central location by overhead high-pressure sprinklers

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or from sprinklers from the moving platform.

2.4 Drip Irrigation

In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance.

2.5 Centre Pivot Irrigation

In this, the water is distributed by a sprinkler system moving in a circular pattern.

2.6 Sub Irrigation

Water is distributed through a system of pumping stations gates, ditches and canals by raising the water table.

2.7 Manual Irrigation

This a labour intensive and time-consuming system of irrigation. Here, the water is distributed through watering cans by manual labour.

3. Methods of Irrigation

Irrigation can be carried out by two different methods:

- Traditional Methods
- Modern Methods

3.1 Traditional Methods of Irrigation

In this method, irrigation is done manually. Here, a farmer pulls out water from wells or canals by himself or using cattle and carries to farming fields. This method can vary in different regions.

The main advantage of this method is that it is cheap. But its efficiency is poor because of the uneven distribution of water. Also, the chances of water loss are very high.

Some examples of the traditional system are pulley system, lever system, chain pump. Among these, the pump system is the most common and used widely.

3.2 Modern Methods of Irrigation

The modern method compensates the disadvantages of traditional methods and thus helps in the proper way of water usage.

The modern method involves two systems:

- Sprinkler system
- Drip system

Sprinkler System

A sprinkler system, as its name suggests, sprinkles water over the crop and helps in an even distribution of water. This method is much advisable in areas facing water scarcity.

Here a pump is connected to pipes which generate pressure and water is sprinkled through nozzles of pipes.

Drip System

In the drip system, water supply is done drop by drop exactly at roots using a hose or pipe. This method can also be used in regions where water availability is less.

4. Importance of Irrigation

The importance of irrigation can be explained in the following points:

1. Insufficient and uncertain rainfall adversely affects agriculture. Droughts

and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.

2. The productivity on irrigated land is higher as compared to the un-irrigated land.
3. Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make it possible to grow more than one crop in most of the areas of the country.
4. Irrigation has helped to bring most of the fallow land under cultivation.
5. Irrigation has stabilized the output and yield levels.
6. Irrigation increases the availability of water supply, which in turn increases the income of the farmers.

Irrigation should be optimum because even over-irrigation can spoil the crop production. Excess water leads to water logging, hinder germination, increased salt concentration and uprooting because roots can't withstand standing water. Thus the proper method is to be used for the best cultivation.

Conclusion

Among the requirement of agricultural development, irrigation is indispensable for agricultural production. Irrigation is an ancient approach to promoting agricultural development. It is so because in the present day modernized agricultural pattern, the increasing use of modern agricultural inputs and marking the use of various chemicals for soil conservation more effective, require more water for irrigation. The less use of agricultural inputs results only in a low level of production. Thus, we see that irrigation affects the level of agricultural production. Recent advances in agricultural technology have further enhanced the importance of irrigation as it is prerequisite for the adoption of these technologies. Finally in this study conclude that in area of irrigation facilities increased their cropping intensity and irrigation intensity is higher.