

What is Precision irrigation?

Precision irrigation is the application of the right amount of water at the right time to right place of plant in order to provide optimal growing conditions.

Types of modern irrigation system:

1. Sprinkler irrigation system
2. Drip irrigation system
3. Subsurface irrigation
4. Center pivot irrigation system
5. Lateral move irrigation system
6. Rain irrigation system
7. Fog irrigation system

Factors to Consider When Selecting an Irrigation System

**1. Soil Type:**

Soil type plays an essential role in irrigation. Different soils have different abilities to retain water (water-holding capacity) or allow drainage. For example, sandy soils need a more frequent watering rate with smaller amounts than clay soil.

**2. Crop type:**

Different crops have different water requirements, and selecting an irrigation system that suits the water demand of the crops planted is essential. For instance, crops with deep root systems need deeper watering using drip irrigation systems.

**3. Climate Conditions:**

The climate is crucial in the selection of the right irrigation system. Areas with high humidity may not require intensive irrigation. Therefore, a less intensive irrigation system such as drip irrigation can be suitable. Similarly, regions that receive high rainfall need less water, so a drip irrigation system or soaker hose may be the best solution

**4. Water Source, Availability and Quality:**

The available water source usually plays a crucial role when a farmer chooses an irrigation system for his/her field. For example, a surface water source would not require a sprinkler system that filters water from the start.

Additionally, the source water quality could dictate the pressure and the selection of an adequate filtration system suitable for plants.

### **What is Sprinkler irrigation?**

Sprinkler irrigation system is application of water under high pressure with the help of a pump. It releases water similar to rainfall through a small diameter nozzle placed in the pipes.

### **Sprinkler classification:**

1. Impact sprinkler
2. Gun sprinkler
3. Pop-up sprinkler
4. Gear driven sprinkler
5. Rotary steam sprinkler
6. Turbo hummer sprinkler

### **Advantage of Sprinkler irrigation**

1. Suitable in all types of soil except heavy clay.
2. Water saving up to 30% - 50 %.
3. Suitable for irrigation where the plant population per unit area is very high.
4. Helps to increase yield.
5. Reduces soil compaction.
6. Soluble fertilizers and chemicals use are possible.

### **Disadvantage of Sprinkler irrigation**

1. Under the windy condition the efficiency of water is less
2. Some time the saline water can be burn the leaves of plant.
3. Expensive initial cost
4. Under high temperature more evaporation happen
5. Nozzle of system may be clogged

### **What is Drip irrigation?**

Drip irrigation is dripping water onto the soil at very low rates (2-20 litres/hour) from a system of small diameter plastic pipes.

### **Advantage of drip irrigation**

1. High water application efficiency.
2. Minimized fertilizer/nutrient loss due to reduced leaching
3. Ability to irrigate irregular shaped fields.
4. no soil erosion
5. Soil type plays less important role in frequency of irrigation
6. Highly uniform distribution of water.
7. Weed control
8. Seed germination is improved.

### **Disadvantage of Drip irrigation**

1. Expensive initial cost.
2. Nozzle of system may be clogged.

### **What is fertigation?**

Refer to the process of applying liquid or water soluble fertilizer through irrigation system to the plant for their specific growth stage.

- ◆ Nutrients applied directly to the plant's roots
- ◆ High uptake efficiencies
- ◆ eliminating pollution
- ◆ reduce weed density