



Soil Preparation and Sowing of Seeds

People are generally mistaken about what the first step of farming or agriculture is. We assume that it is the sowing of seeds. But even before the seeds are sown for germination, we must ensure that the soil is ready for farming. This is the process of soil preparation.

Preparation of Soil

As we discussed, soil preparation is the first step to be followed when we start the agricultural process. It usually entails the loosening up of the top layer of soil i.e. topsoil. Plants absorb water and nutrients from the soil through their roots, hence it is essential to prepare the soil, so we can have a healthy and bountiful produce.

The soil is prepared by the following methods

- 1) Ploughing
- 2) Levelling
- 3) Manuring

1) Ploughing

Ploughing is the process of loosening and turning the soil. It is also known as tilling. Ploughing of soil is important for the following reasons :

Allows roots of the plants to penetrate deeply into the soil. This firmly roots the plant. Loose soil also provides better aeration to the roots allowing them to breathe easily. It assists the growth of microbes and worms, which perform decomposing and add nutrients and humus to the soil. Ploughing also removes weeds and other waste materials from the field. It brings nutrient-rich soil to the top, which helps in the growth of plants

The tools we use for ploughing are:

Plough: This is the most ancient tool used for ploughing. A plough may be made of wood or a

metal such as iron. It has a blade or sticks attached to the front that is used to cut through the soil. Ploughs are traditionally drawn by cattle such as ox or cows, but in modern times tractors are used. Ploughs till the soil, add manure and fertilizers and scrapes the soil.

Hoe: A hoe is also an ancient agricultural tool. We use it to till the land, remove weeds and dig up soil. They generally have a long wooden rod with a bent iron plate at one end. The other end may be attached to an animal. Hoe was used for tilling in olden times, but these days are only used to remove weeds.

Cultivator: This is the modern mechanism we use currently to plough our farms. It involves the use of a tractor to drive the cultivator. They dig up and pulverize the soil. Cultivators also kill weeds and dig up unwanted vegetation. Cultivator may be more expensive than the traditional methods, but it saves a lot of time and labour force.

2 Levelling

Once the field is ploughed, the topsoil is quite loose. There is a strong possibility that strong winds or rain will wash away the topsoil. The soil then needs to be levelled again to ensure its strong foundation. This levelling of soil is done with an implement called the leveller, which is a heavy wooden or iron plank. Levelling of the field also helps in uniform distribution of water during irrigation. This is the final step of soil preparation.

3) Manuring

To increase the fertility of the soil, we add manure to the soil even before we begin sowing the seeds. We add the manure before we plough the field, so it gets properly incorporated into the soil.

Sowing of Seeds

This is the second step in crop production. Once the soil preparation is done, it is now time to sow the seeds. Sowing is the actual process of planting the seeds in the soil. The seeds that are sown have to be selected very carefully and have to be of high quality.

Methods of sowing seeds

The various methods of sowing the seeds are

1) Sowing by hand: The scattering of seeds by hand is the simplest method of sowing seeds. This method is also called broadcasting. This is the most economical method that can be employed. However the distribution of seeds is not uniform, it may result in clusters of seeds on the field.

2) Seed Drill: This is a modern method of sowing seeds. It is better and more efficient method than sowing by hand. It is usually done by attaching iron drills to a tractor. Seed drills ensure that the seeds are planted at equal intervals and at the correct depth in the soil.

Prevention to be taken while sowing seeds

Sowing seeds is essentially the most important part of crop production. It is necessary to focus on even the smallest details. The following precautions should be taken when sowing seeds, Seeds must be planted at the correct distance or intervals from each other. This is to ensure that all plants get their fair share of light, water and nutrients for growth and development. Planting seeds at equidistance have been proved to increase the yield of the farm.

Seed must be sown at the correct depth in the soil. If seeds are simply scattered on the top they are likely to be blown away or eaten by animals or birds. If we sow them too deep into the ground, they will not germinate due to lack of air.

The seeds that you sow should be of the highest quality. They have to germ and disease free. Learn more about Protection and Harvesting of Crops here. Irrigation means the watering of land to make it ready for agriculture. It is the process of application of water to crops through artificial channels to grow them. Water is vital for the growth of plants. And, there can be no plants or crops if they do not have access to water in some form. It is, thus, crucial to supply water to crops and plants in time as per their need. The supply of water to plants comes from various water resources. For example, wells, ponds, lakes, canals, dams and reservoirs.

Importance of Irrigation

Irrigation is necessary for agriculture and farming.

Firstly, it enables growth and photosynthesis in Plants. Plants absorb minerals and nutrients from the soil via their roots. These minerals dissolve in the water present in the soil. Then the water transports these nutrients to all parts of the plant. In this way, it enables growth and photosynthesis.

Secondly, it provides the moisture that is crucial during the germination phase of the plant's life cycle

Thirdly, it helps increase soil fertility by adding moisture to it. It also makes the land easier to plough.

Lastly, it increases the yield from the farm.

What are the Advantages & Disadvantages of Manure and Fertilizers?

Traditional Irrigation Methods

These irrigation systems were used in earlier years. However, even today some small farms in rural areas adopt these. Although they are cheaper than modern methods, they are not as efficient. Because they need human or animal labour to function. Some of these systems are,

1. Moat

Also called the pulley system, it involves pulling up water from a well or other such source to irrigate the land. This is a time consuming and labour intensive process, but it is very cost-efficient. Also, using a moat avoids wastage of water.

2. Chain pump

A chain pump consists of two large wheels connected by a chain. There are buckets attached to the chain. Further, one part of the chain dips into the water source. As the wheel turns, the bucket picks up water. The chain later lifts them to the upper wheel where the water gets deposited into a source. The empty bucket gets carried back down.

3. Dhekli

It is a process of drawing water from a well or such similar source. Here we tie a rope and bucket to a pole. At the other end, we tie a heavy stick or any other object as a counterbalance. And we use this pole to draw up water.

4. Rahat

Rahat uses animal labour. Above the well, we tie a large wheel. An ox or cow would turn the wheel to draw the water from the well.

Modern Irrigation Methods

These are more efficient irrigation systems that were invented in recent decades. These help us use water economically without wastage for agriculture. Let us take a look at the two most important systems, the drip irrigation and the sprinkler.

1. Drip Irrigation System

Drip irrigation is the most used irrigation system these days. In the drip irrigation, we lay plastic pipes in rows near the crops or plants. These pipes have holes in them. The water seeps from

these holes drop by drop, hence the name drip irrigation. Drip irrigation is one of the most efficient irrigation methods as it reduces water wastage in agriculture.

2. Sprinkler System

Sprinkler systems mimic the phenomenon of rain. In sprinkler systems, the pipes carry water to central locations on the farm. The sprinklers placed there, distribute the water across the fields. The sprinkler method is one of the most efficient irrigation methods to irrigate the uneven land for agriculture. In addition, sprinkler systems provide the best coverage regardless of the size of the farm.

Answer the following questions :

Q:1 Which of the following systems supply water directly to the roots without wastage?

- a) Sprinkler
- b) Drip irrigation
- c) Moat
- d) All the above

Q: 2 Which among the following tools saves labour and time?

- a) Hoe
- b) Cultivator
- c) Plough
- d All of the above

Q.3 Name a tool which is used for removing weeds and for loosening soil.

Q.4 What is the process of loosening and turning of the soil called?

Q.5 What are the substances which are added to the soil in the form of nutrients called?

Q.6 What is the process of supplying water to crops at different intervals is called?

Q.7 What are the sources of irrigation?

Q.8 What is irrigation? Describe two methods of irrigation which conserve water.