CROP PRODUCTION AND MANAGEMENT

Types of Crops
Soil Preparation
Sowing
Harvesting
Fertilisers
Insecticides
All living organisms require food. Plants can make their food themselves. Animals including humans can not make their own food. The energy from food is utilized by organisms for carrying out their various body functions, such as digestion, respiration and excretion. We get our food from plants, or animals, or both.

In order to provide food for a large population— regular production, proper management and distribution of food is necessary.

**Agricultural Practices**

When plants of the same kind are grown and cultivated at one place on a large scale, it is called a *crop*. For example, crop of wheat means that all the plants grown in a field are that of wheat. Crops are of different types like cereals, vegetables and fruits. These can be classified on the basis of the season in which they grow. India is a vast country. The climatic conditions like temperature, humidity and rainfall vary from one region to another.

Accordingly, there is a rich variety of crops grown in different parts of the country. Despite this diversity, two broad cropping patterns can be identified. These are:

(i) *Kharif Crops*: The crops which are sown in the rainy season are called kharif crops. The rainy season in India is generally from June to September. Paddy, maize, soyabean, groundnut, cotton, etc., are kharif crops.

(ii) *Rabi Crops*: The crops grown in the winter season are called rabi crops. Their time period is generally from October to March. Examples of rabi crops are wheat, gram, pea, mustard and linseed. Besides these, pulses and vegetables are grown during summer at many places.

**Basic Practices of Crop Production**

Cultivation of crops involves several activities undertaken by farmers over a period of time. These activities or tasks are referred to as *agricultural practices*. These activities are listed below.

(i) Preparation of soil
(ii) Sowing
(iii) Adding manure and fertilisers
(iv) Irrigation
(v) Protecting from weeds
(vi) Harvesting
(vii) Storage

(i) *Preparation of Soil*

The preparation of soil is the first step before growing a crop. One of the most important tasks in agriculture is to turn the soil and loosen it. This allows the roots to penetrate deep into the soil. The loose soil allows the roots to breathe easily even
when they go deep into the soil. The loosened soil helps in the growth of earthworms and microbes present in the soil.

The process of loosening and turning of the soil is called **tilling** or **ploughing**. This is done by using a plough. Ploughs are made of wood or iron. If the soil is very dry, it may need watering before ploughing. The ploughed field may have big pieces of soil called crumbs. It is necessary to break these crumbs with a plank. The field is levelled for sowing as well as for irrigation purposes. The levelling of soil is done with the help of a leveller.

**(ii) Sowing**

Sowing is the most important part of crop production. Before sowing, good quality seeds are selected. Good quality seeds are clean and healthy seeds of a good variety. Farmers prefer to use seeds which give a high yield.

Before sowing, one of the important tasks is to know about the tools used for sowing seeds

**Traditional tool:** The tool used traditionally for sowing seeds is shaped like a funnel. The seeds are filled into the funnel, passed down through two or three pipes having sharp ends. These ends pierce into the soil and place seeds there.

**Seed drill:** Nowadays the seed drill is used for sowing with the help of tractors. This tool sows the seeds uniformly at proper distances and depths. It ensures that seeds get covered by the soil after sowing. This prevents damage caused by birds. Sowing by using a seed drill saves time and labour.

**(iii) Adding Manure and Fertilisers**

The substances which are added to the soil in the form of nutrients for the healthy growth of plants are called **manure** and **fertilisers**. Soil supplies mineral nutrients to the crop. These nutrients are essential for the growth of plants. In certain areas, farmers grow crop after crop in the same field. The field is never left uncultivated or fallow.

Continuous growing of crops makes the soil poorer in certain nutrients. Therefore, farmers have to add manure to the fields to replenish the soil with nutrients. This process is called manuring.

Manure is an organic substance obtained from the decomposition of plant or animal wastes. Farmers dump plant and animal waste in pits at open places and allow it to decompose. The decomposition is caused by some microorganisms. The decomposed matter is used as organic manure.
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Fertiliser</th>
<th>Manure</th>
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<tbody>
<tr>
<td>1</td>
<td>A fertiliser is an inorganic salt</td>
<td>Manure is a natural substance obtained by the decomposition of cattle dung, human waste and plant residues.</td>
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<tr>
<td>2</td>
<td>A fertiliser is prepared in factories.</td>
<td>Manure can be prepared in the fields.</td>
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<tr>
<td>3</td>
<td>A fertiliser does not provide any humus to the soil.</td>
<td>Manure provides a lot of humus to the soil.</td>
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<tr>
<td>4</td>
<td>Fertilisers are very rich in plant nutrients like nitrogen, phosphorus and potassium.</td>
<td>Manure is relatively less rich in plant nutrients.</td>
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**Advantages of Manure**: The organic manure is considered better than fertilisers. This is because

- it enhances the water holding capacity of the soil.
- it makes the soil porous due to which exchange of gases becomes easy.
- it increases the number of friendly microbes.
- it improves the texture of the soil.

**(iv) Irrigation**

All living beings need water to live. Water is important for proper growth and development of flowers, fruits and seeds of plants. Water is absorbed by the plant roots. Along with water, minerals and fertilisers are also absorbed. Plants contain nearly 90% water. Water is essential because germination of seeds does not take place under dry conditions. Nutrients dissolved in water get transported to each part of the plant. Water also protects the crop from both frost and hot air currents.

The supply of water to crops at different intervals is called **irrigation**. The time and frequency of irrigation varies from crop to crop, soil to soil and season to season.

**Sources of irrigation**: The sources of irrigation are— wells, tubewells, ponds, lakes, rivers, dams and canals.

**Traditional Methods of Irrigation**

The water available in wells, lakes and canals is lifted up by different methods in different regions, for taking it to the fields. Cattle or human labour is used in these methods. So these methods are cheaper, but less efficient. The various traditional ways are:

(i) Moat (pulley-system)
Modern Methods of Irrigation

Modern methods of irrigation help us to use water economically. The main methods used are as follows:

(a) Sprinkler System: This system is more useful on the uneven land where sufficient water is not available. The perpendicular pipes, having rotating nozzles on top, are joined to the main pipeline at regular intervals. When water is allowed to flow through the main pipe under pressure with the help of a pump, it escapes from the rotating nozzles. It gets sprinkled on the crop as if it is raining. Sprinkler is very useful for sandy soil.

(b) Drip system: In this system, the water falls drop by drop just at the position of the roots. So it is called drip system. It is the best technique for watering fruit plants, gardens and trees.

(v) Protection from Weeds

In a field many other undesirable plants may grow naturally along with the crop. These undesirable plants are called weeds.

The removal of weeds is called weeding. Weeding is necessary since weeds compete with the crop plants for water, nutrients, space and light. Thus, they affect the growth of the crop.

Farmers adopt many ways to remove weeds and control their growth. Tilling before sowing of crops helps in uprooting and killing of weeds, which may then dry up and get mixed with the soil. The best time for the removal of weeds is before they produce flowers and seeds. The manual removal includes physical removal of weeds by uprooting or cutting them close to the ground, from time to time. This is done with the help of a khurpi.

Weeds are also controlled by using certain chemicals, called weedicides; these are sprayed in the fields to kill the weeds. They do not damage the crops.

(Vi) Harvesting

Harvesting of a crop is an important task. The cutting of crop after it is mature is called harvesting. In harvesting, crops are pulled out or cut close to the ground. It usually takes 3 to 4 months for a cereal crop to mature.

In the harvested crop, the grain seeds need to be separated from the chaff. This process is called threshing. This is carried out with the help of a machine called 'combine' which is in fact a combined harvester and thresher.
(Vii) Storage

Storage of produce is an important task. If the crop grains are to be kept for longer time, they should be safe from moisture, insects, rats and microorganisms. The fresh crop has more moisture. If freshly harvested grains (seeds) are stored without drying, they may get spoilt or attacked by organisms, losing their germination capacity.

Summary

- In order to provide food to our growing population, we need to adopt certain agricultural practices.
- Same kind of plants grown and cultivated at a place constitute a crop.
- In India, crops can be broadly categorised into two types based on seasons - rabi and kharif crops.
- It is necessary to prepare soil by tilling and levelling. Ploughs and levellers are used for this purpose.
- Sowing of seeds at appropriate depths and distances gives good yield. Good variety of seeds is sown after selection of healthy seeds. Sowing is done by seed drills.
- Soil needs replenishment and enrichment through the use of organic manure and fertilisers. Use of chemical fertilisers has increased tremendously with the introduction of new crop varieties.
- Supply of water to crops at appropriate intervals is called irrigation.
- Weeding involves removal of unwanted and uncultivated plants called weeds.
- Harvesting is the cutting of the mature crop manually or by machines.
- Separation of the grains from the chaff is called threshing.
- Proper storage of grains is necessary to protect them from pests and microorganisms.
- Food is also obtained from animals for which animals are reared. This is called animal husbandry.