chapter 1

Crop Production and Management

Food is essential for all living organisms. The energy we get from food is used to perform all the activities we do in our daily routine. Plants can make their food themselves but animals including humans cannot.

They get it from plants or animals that eat plants. Thus, humans and animals are directly or indirectly dependent on plants.

In this chapter, we will learn about :

1. Food from plants
2. Agricultural practices
3. Food from animals

AGRICULTURE

Agriculture is the science and art of cultivating plants and livestock. Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that enabled people to live in cities. The history of agriculture began thousands of years ago. After gathering wild grains beginning at least 105,000 years ago, nascent farmers began to plant them around 11,500 years ago. Pigs, sheep and cattle were domesticated over 10,000 years ago. Plants were independently cultivated in at least 11 regions of the world. Industrial agriculture based on large-scale monoculture in the twentieth century came to dominate agricultural output, though about 2 billion people still depended on subsistence agriculture into the twenty-first century.

PRODUCTION OF CROPS

A crop is a plant that is cultivated or grown on a large scale. Crops are generally grown so they can be commercially traded, i.e. any plant that is grown and harvested extensively for profit purposes. Crops are living plants grown by farmers. Most crops are foods such as grain, vegetables, or fruit. Some crops are for drugs, such as quinine, or fibers such as cotton, or other materials such as rubber or wood. Farms are usually made to grow just one kind of crop.

Production of Crops

When plants of the same kind are grown and cultivated at one place on a large scale for food, clothing and medicines, they are called crops. Crops are domesticated plants, most of which have been selected to improve their size, taste and other qualities.

Growing crops is a part of agriculture.

There are two major types of crops that are grown in India.

Interesting Fact

Paddy crop needs more water. That is why it is grown in rainy season.

Kharif Crops

The word "Kharif" is Arabic for autumn since the season coincides with the beginning of autumn or winter. Kharif crops also are known as monsoon crops. These are the crops that are cultivated in the monsoon season. The Kharif season differs in every state of the country but is generally from June to September. These crops are usually sown at the beginning of the monsoon season around June and harvested by September or October. Rice or paddy, maize, bajra, ragi, soyabean, groundnut, cotton are all types of Kharif crops.

Kharif Crop

Rabi Crops

The Arabic translation of the word "Rabi" is spring. These crops' harvesting happens in the springtime hence the name. The Rabi season usually starts in November and lasts up to March or April. Rabi crops are mainly cultivated using irrigation since monsoons are already over by November. In fact, unseasonal showers in November or December can ruin the crops. The seeds are sown at the beginning of autumn, which results in a spring harvest. Wheat, barley, mustard and green peas are some of the types of major rabi crops that are grown in India.

Rabi Crop

AGRICULTURAL PRACTICES

Food is the basic requirement of every living being. They depend on plants and animals for food. Ancient men began the cultivation of food in a small area and used certain procedures for their management and improvement. This art of cultivation of crop is called agriculture.

In agriculture, there are certain parameters to be considered such as the type of crop, properties of soil, climate, etc. Depending upon these parameters, farmers decide which crop to be cultivated at what time of the year and place. Moreover, to yield a high-quality product, suitable soil, climate and season are not sufficient. It requires a set of procedures which needed to be followed. The measures which are followed to raise crops are called agricultural practices. Different agricultural practices are discussed below.

SOIL PREPARATION

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. Adding manure and fertilisers.

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 :

Ploughing

- 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:

1. **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 fertilisers and scrapes the soil.
2. **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.
3. **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.

Land Levelling

Interesting Fact

Levelling helps to prevent soil erosion by wind or air. Plants grow uniformly in the field and water is also uniformly distributed throughout the soil. It prevents water logging and loss of moisture from ploughed soil.

3. Adding Manure and fertilisers

Agriculture is one of the primary occupations of all the countries around the world. Indeed, we are mainly dependent on agriculture for our daily needs. To increase the agriculture produce, the farmers work on improving the fertility of soil, which is possible by adding manure and fertiliser. Manure refers to the natural substance that is obtained from the decomposition of the waste of plants and animals such as cow dung, etc. On the other hand, fertiliser is the chemical substance which can be added to the soil to increase its nutrient content. If you are planning for farming, you should be known about the ways to enhance the fertility of the soil. So, take a read of this article in which we've simplified the difference between manure and fertiliser.

Definition of Manure : Manure can be described as a natural substance, derived from the decomposition of animal dung or crop residue. To prepare manure, farmers dump waste of plants and animals in pits at open areas, for decomposing it, with the help of micro-organisms. The matter so obtained after decomposition is called organic manure. It is rich in organic material but contains little amount of plant nutrient.

Manure

Manure is considered very helpful in increasing the fertility of the soil, by enhancing its capacity to retain water, by improving the texture of the soil and by increasing the number of friendly microbes. Moreover, manure makes the soil porous, that facilitates the exchange of gases.

Definition of Fertiliser : As it is evident from the name, fertiliser is a natural or synthetic substance that contains a lot of plant nutrients which are necessary for the growth and productivity of the plants. It is applied to the soil to increase the yield of crops, like wheat, maize, paddy, etc.

Fertiliser

There are two types of fertilisers, i.e. organic fertiliser and synthetic fertiliser. Organic fertilisers are the ones made up of natural material like composted plant materials, peat moss, bone, seaweed, etc. Synthetic fertilisers are the inorganic ones that are industrially manufactured chemicals, which easily dissolve in water and are used by plants instantly as they are added to the soil.

Fertiliser not only improves the fertility of soil but also replaces the chemical substances used by earlier crops from the soil. However, excessive use of synthetic fertiliser can harm the effectiveness of soil.

Examples of fertiliser are urea, superphosphate, potash, NPK (Nitrogen, Phosphorous, Potassium), etc.

Difference Between Manure and Fertiliser

Basis For Comparison	Manure	fertiliser
Meaning	Manure is a natural material, obtained by decaying plant and animal waste, that can be applied to the soil to enhance its fertility.	Fertiliser is a human-made or natural substance, that can be added to the soil to improve its fertility and increase the productivity.
Preparation	Prepared in fields.	Prepared in factories.
Humus	It provides humus to the soil.	It does not provide humus to the soil.
Nutrients	Comparatively less rich in plant nutrients.	Rich in plant nutrients.
Absorption	Slowly absorbed by plants.	Quickly absorbed by plants.
Cost	It is economical.	It is costly.
Side effect	There is no side effect, in fact it improves the physical condition of soil.	It causes harm to the living organisms present in the soil.

Key Differences Between Manure and Fertiliser

The difference between manure and fertiliser can be drawn clearly on the following grounds:

1. Manure can be described as an organic material prepared by decomposition of crop residue or animal excreta, that can be added to the soil to improve its fertility. Unlike, fertiliser is described as any substance (organic or inorganic), that is added to the soil to increase the yield of crops.
2. The manure is prepared in the field, by dumping the animal and plant waste in open pits, to decompose it. Conversely, fertilisers are produced in factories through the chemical procedure.
3. As manure is generated out of the decayed plant and animal waste, it provides humus to the soil, which increases the water holding capacity of the soil. Unlike, fertiliser does not provide humus to the soil.
4. Manure is not as much rich as fertilisers in terms of plant nutrients, as fertilisers are rich in plant nutrients.
5. As manure is insoluble in water, it is slowly absorbed by the soil. On the other hand, fertilisers get easily dissolved in water, and that is why these are used by the plants immediately.
6. While manure is economical, as it can be prepared by farmers themselves, fertilisers are industrially manufactured chemical; they are costly.

7. Manure does not cause any harm to the soil; in fact, it raises the quality of the soil in the long run. In contrast, use of fertiliser in excess can decrease the effectiveness of the soil, as well as it causes harm to the organisms present in 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.

Activity 1

Aim : To show that defective seed cannot germinate.

Materials Required : A beaker, water, sand, wheat seed.

Procedure : Take a beaker and fill half of it with water. Put a handful of wheat seeds and stir well, wait for some time.

Observation : Some seeds settle down at the bottom and some seeds float.

Conclusion : Floating seeds are defective and damaged, infected with pests. They become hollow and lighter. They cannot germinate.

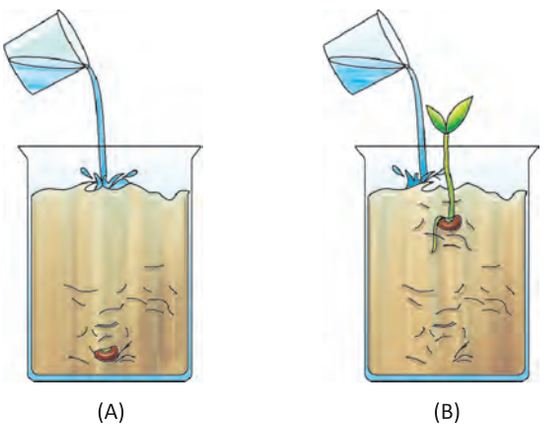
Activity 2

Aim : To show the effect of deep and shallow sowing of seeds.

Procedure : Take two beakers filled with soil. In the first beaker, place the seeds on the surface of the soil, in the second beaker put the seeds deep inside the soil. Water the beakers daily to keep the soil moist.

Observation : In figure (A) there is no germination of seeds because they are sown deep into the soil and there is lack of water and non-availability of oxygen.

Conclusion : The seeds sown too deep into the soil may fail to germinate due to lack of water or non availability of oxygen.



(A) (B)

The seeds sown too deep into the soil may fail to germinate due to lack of water or non-availability of oxygen.

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.


Sowing Seeds Manually


Seed Drill

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.

Precautions 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.
- Seeds 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 be germ and disease free.

IRRIGATION

Irrigation essentially means the watering of land to make it ready for agricultural purposes. An irrigation system is the supplying of water via artificial canals and channels to growing plants and crops in a field.

Water is vital for the growth of plants. There can be no plants or crops if they do not have access to water in some form. It is, therefore, crucial to supply water to crops and plants, periodically and as per their requirement. So irrigation is the periodic and appropriate supply of water to plants. The water for this irrigation comes from various sources such as wells, ponds, rivers, dams, reservoirs, rainfall, etc.

Importance of Irrigation

Irrigation is necessary for agriculture and farming due to the following reasons:

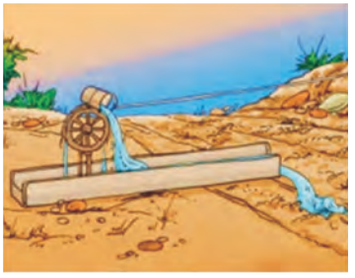
1. Plants absorb minerals and nutrients from the soil via their roots. These minerals are dissolved in the water present in the soil. Then the water transports these nutrients to all parts of the plant, enabling growth and photosynthesis.
2. Irrigation provides the moisture that is crucial during the germination phase of the plant's life cycle.
3. Irrigation also makes the soil more fertile (by adding moisture to it) and easier to plough.
4. Proper irrigation also increases yield from the farm.

Traditional Methods of Irrigation

These are the methods of irrigation that were used in the earlier years. Even today some small farms in rural areas adopt these. Although they are cheaper than the modern methods, they are not nearly as efficient. They require human or animal labour to function. Some of these methods are :

1. **Moat :** Also called the pulley system, it involves pulling up water from a well or other such source to irrigate the land. It is an extremely time consuming and labour intensive system, but it is very cost efficient. Also, wastage of water is avoided when using a moat system of irrigation.
2. **Chain Pump :** A chain pump consists of two large wheels connected by a chain. There are buckets attached to the chain. 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. And the empty bucket gets carried back down.
3. **Dhekli :** It is a system 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 system of irrigation 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.


Moat


Chain pump


Dhekli


Rahat

Modern Methods of Irrigation

These are more efficient systems of irrigation that were invented in the recent decades. These help us use water economically without wastage. Let us take a look at the two most important methods.

1. **Drip System of Irrigation :** The most commonly used method of irrigation these days is the drip method. They lay the pipes in rows near the crops or plants. These plastic pipes have holes in them. Water seeps from these holes drop by drop, hence the name drip irrigation. This is an extremely efficient method of irrigation as it reduces water wastage.
2. **Sprinkler System :** This system mimics the phenomenon of rain. Water is carried by pipes to central locations on the farm. Sprinklers placed here distribute the water across the fields. This is the most efficient method to irrigate the uneven land. Sprinkler system also provides the best coverage regardless of the size of the farm.


Drip System of Irrigation


Sprinkler System

CROP PROTECTION

For the farmer to get maximum yield from his farm, he has to minimise his crop loss. One important way to do so is Crop protection management. Crops need protection from various dangers such as pests, insects, weeds, disease-causing pathogens, etc. All the labour of the farmer will be futile if he does not protect his crops.


Hand Sickle

Weeding : When you grow crops in a field, you must have noticed that there are other plants and weeds growing alongside the crops. These are undesirable plants that rob the crops of their resources. They compete with the crops for sunlight, water and nutrients from the soil. This results in the crops being undernourished, which reduces the yield from the farm. To ensure the productivity of these plants, we remove these weeds by a process called weeding. The common weeds we usually find in farms are wild oats, grass, Amaranthus, etc. There are various methods of weeding, some of which are :


Weeding

- The traditional method of removing weeds by hand.
- Ploughing the field to remove the weeds even before sowing the seeds.
- Manually removing weeds using a trowel and harrow.
- Spraying chemicals on the weeds, and ensuring that such chemicals do not harm the actual crops.

Activity 3

Aim : Protecting garden plants from the weeds.

Procedure : Take a spray bottle and fill it with water. Now add dishwashing liquid or any insecticidal soap solution or household vinegar in it. Spray the solution on the weeds, on a hot sunny day.

Observation and Conclusion : Weeds will be destroyed by acidic and basic solutions.

Pesticides : The other most harmful factor for crops are the pests, insects, rodents, etc. that we find on a farm. These pests and rodents can destroy large portions of the crop plantation. Expert studies have found that all major crops like rice, cotton, wheat, etc. may lose around 22% of their yield to insects, rodents and pests. The most effective way to protect your crops against this threat is by spraying chemicals, called insecticides or pesticides.

There are also infections causing microorganisms in the soil that can also affect the crops. These bacteria, fungi, etc. can go through the whole crop cultivation in a matter of days. Crops have to be protected against these by pesticides and biocontrol agents.

HARVESTING

Once the crop has reached maturity, it now needs to be harvested. So harvesting is the cutting and gathering of the matured crop. The term harvesting also generally includes the immediate post-harvest practices such as threshing and winnowing. Let us look at both these processes.

- **Threshing :** The process of separating the grains from their chaffs or pods is threshing.
- **Winnowing :** After threshing, we must separate the grains from the chaffs. Winnowing is the process of separating the grains.

There are various factors to consider before the harvesting of crops. The crops need close examination to ensure that harvesting is not premature. This leads to shedding of seeds and loss of crop. And if the crops are overripened, they lose their value in the market or may even be unconsumable.

Harvesting in India is generally done manually. Sickle is a tool that is used to cut the crop. This method is laborious and time-consuming and only suitable for small-sized farms. On larger farms, a harvester is used which combines harvesting with threshing and winnowing.

STORAGE

When crops are cultivated for commercial purposes, they are cultivated on a huge scale. We are talking about quintals upon quintals of grains and crops. So this presents us with a logistic problem of where and how to store these grains. It requires absolute planning and management so that these grains can be stored without spoilage. Let us take a look at the steps to be taken for successful storage of crops/grains.

- **Drying of Grains :** The crops have to be stored at the recommended level of moisture, which varies for different types of grains. Excess moisture in the crops promotes the growth of micro-organisms and can rot the crops and cause huge losses. Moisture may also germinate the stored seeds, which has to be avoided. Ineffective drying reduces the grain quality and causes huge losses.
- **Storing :** To protect the grains, they have to be stored in closed containers. On a small or medium scale, farmers store them in metal containers or jute bags. On a larger scale, silos or granaries are the preference. Storing in closed containers prevents moisture from re-entering and protects against rodents and insects also.

Interesting Fact

Dried Neem leaves are used for storing food grains at home.

- **Insecticide Treatment :** To prevent rodents and insects from attacking the stored crops, they have to be treated with insecticides and pesticides. The process of fumigation, where the granaries are filled with gaseous pesticides to suffocate the pests, may also be carried out. There are alternate bio-friendly pesticides such as dried neem leaves.

FOOD FROM ANIMALS

Animal Husbandry

It is the science of breeding, caring, rearing and overall management of farm animals. It includes the daily care and meticulous breeding and raising of livestock. Animal husbandry in the olden days was limited to cattle rearing of animals such as cow, ox, sheep, goats, etc. But it has now expanded to poultry farming, apiculture (beekeeping), fisheries, etc.

Now, it is the moral and the legal responsibility of animal owners to

ensure the well-being and welfare of these animals. The management of livestock is a big part of farm management. To keep up with the ever-rising standards, cattle management has become incredibly crucial. The two main important aspects of cattle management are sheltering the animals and feeding the animals.

Shelter

An adequate shelter can improve the welfare of cattle. It helps minimize the effects of extreme weather conditions on the animals.

Food for Animals

So if you think feeding cattle is just about letting them go to pasture, you are mistaken. Cattle need to be fed food that fulfils their nutritional needs, so they can be there most productive on the farm. But when the farmer provides them with said food, farming requirements must also be met.

- Firstly the farmer needs to assess the cattle and figure out their nutritional requirements.
- Rations of the feed have to be calculated according to the various types of cattle and their development stage.
- Constantly modifying the feeding pattern according to the weather conditions, the health of the animals can be proved.
- Cattle also need to be fed additional supplements and medicines to ensure their prime health and protect them from diseases and encourage higher output.

Key Words

Horticultural crops	:	Large scale cultivation of vegetables
Manuring	:	Mixing manure with soil
Transplantation	:	Process of shifting seedlings from the nursery to the main field
Drip Irrigation	:	The technique of irrigation in which water is released drop-by-drop near the roots of plants
Fertiliser	:	A man-made inorganic compound or a mixture of compounds which provides specific nutrients
Weedicides	:	Chemicals which destroy weeds without harming the crops
Apiculture	:	Rearing of honey-bees on large scale

Important Points

1. In order to provide food to our growing population, we need to adopt certain agricultural practices.
2. In India, crops can be broadly categorised into two types based on seasons—rabi and kharif crops.
3. Sowing of seeds at appropriate depths and distances gives good yield. Good variety of seeds are sown after selection of healthy seeds.
4. Same kinds of plants grown and cultivated at a place constitute a crop.
5. It is necessary to prepare soil by tilling and levelling. Ploughs and levellers are used for this purpose.
6. 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 crops varieties.

7. Weeding involves removal of unwanted and uncultivated plants called weeds.
8. Supply of water to crops at appropriate intervals is called irrigation.
9. Separation of the grains from the chaff is called threshing.
10. Harvesting is the cutting of the mature crop manually or by machines.
11. Proper storage of grains is necessary to protect them from pests and microorganisms.
12. Food is also obtained from animals for which animals are reared. This is called animal husbandry.

Multiple Choice Questions (MCQs)

A. Tick (✓) the correct option :

1. The practice of loosening and turning the soil is known as :
   (a) tilling ☐ (b) threshing ☐ (c) levelling ☐ (d) winnowing ☐
2. Which of the following is not a kharif crop?
   (a) cotton ☐ (b) rice ☐ (c) groundnut ☐ (d) wheat ☐
3. The process of separating grains from the chaff is called :
   (a) harvesting ☐ (b) weeding ☐ (c) winnowing ☐ (d) threshing ☐
4. Which of the following is not a weed?
   (a) chenopodium ☐ (b) gram ☐ (c) amaranthus ☐ (d) wild oat ☐
5. Large-scale rearing of fish is called :
   (a) agriculture ☐ (b) animal husbandary ☐ (c) apiculture ☐ (d) pisciculture ☐
6. The method of sowing seed, mostly by hand at random is called :
   (a) seed drilling ☐ (b) levelling ☐ (c) broadcasting ☐ (d) fallowing ☐

B. Fill in the blanks :

1. Plants of the same kind when grown on a large scale for food, clothing, etc. are called _____.
2. _____ are chemical substances which are rich in a particular nutrient.
3. The practice of rearing honeybees for honey is known as _____.
4. The science or practice of farming, including the rearing of crops and animals is known as _____.
5. The process of loosening and turning of the soil is known as _____.
6. The animals which damage crops are known as _____ and these can be destroyed by chemicals called _____.

C. Match the following :

Column A	Column B
1. Ploughing	(a) Crop protection
2. Poultry	(b) Winter
3. Rabi crop	(c) Cultivator
4. Apiculture	(d) Honey bees
5. Insecticides	(e) Chickens

D. Very Short Answer Questions :

1. Name two categories of crops based on season.
2. Name any two modern methods of irrigation.
3. What is apiculture?
4. Give one word for a farm machine used for both harvesting and threshing.
5. Which crop is grown in rainy season?
6. Name two dairy products.

E. Short Answer Questions :

1. Explain the process of winnowing.
2. Differentiate between rabi and kharif crops. Give two examples of each.
3. Why should grains be dried before storage?
4. What are weeds and weedicides?
5. Name the commonly grown cereal crops.
6. How are fertilisers applied to the soil?

F. Long Answer Questions :

1. What is the history of agriculture?
2. What are crop plants? Name any two crop types with their examples.
3. Discuss two methods of weeding in which poisonous chemicals are not used.
4. What is seed drill? What are the advantages of sowing seeds by using seed drill?
5. Why is land ploughed and levelled before sowing?
6. What is drip irrigation method? Why is it considered advantageous over other methods?
7. How does a manure differ from a fertiliser?

Assignments

A. Read the passage and answer the following questions.

Autumn is traditionally harvest time when the farmers would cut their crops to prepare them for storage or to sell. When I was a kid we lived on a dairy farm and this was always a busy time of year as we harvested our crops and prepared the farm for winter. Farmers use many pieces of large and small equipment to take care of their farm. Before winter they make sure everything is working like it should and they repair anything that needs it. A lot of farmers plow their fields in the fall so it will give them a headstart for the spring. September is also the time that farmers plant winter wheat. It grows until it gets cold and then it goes dormant, which means it stops growing, until spring when it starts growing again. Most farm animals love corn, but it has to picked at just the right time so the farmers can have a supply all winter long. Most corn today is picked with a picker-sheller or a combine, both machines shell the corn off the cob and then the farmer dumps it in a gas batch dryer which dries it to a certain hardness, otherwise it will get moldy in storage. Some farmers still just pick the whole ear with a regular corn picker and store it in a corn crib, if they are going to just pick it, they leave it in the field longer so it will dry. They test the moisture by shelling the corn off the cob and putting a handful into a moisture tester.

1. Why do farmers harvest in the Autumn season?
2. What do farmers traditionally plant in September?
3. What does “dormant” mean?
4. What is the purpose for a gas batch dryer?

Project

1. Make your own herbarium file by collecting different plants.
   Write the information–Name of plant, season of growing, water requirement, date and place when you collected it.