Chapter 1
Production And Management Of Crops

Topics Covered:
1.1 Agriculture
1.2 Crop Plants
1.3 Methods of Crop Production
1.4 Increasing Crop Production
1.5 Animal Husbandry

Learning Objectives:
You will be able to understand:
1. What is agriculture?
2. What are different types of crops?
3. What are various methods of crop production?
4. How can crop production be increased?
5. What is animal husbandry?
6. What are the uses of animal husbandry?

Early man was a food gatherer, who was dependent on wild plants and animal meat for food. Gradually, he learned how to grow plants to obtain food grains and became a food producer. This led to the practice of plant cultivation. Today, about 70% of the Indian population is engaged in food production, i.e., agriculture.

1.1 AGRICULTURE
Agriculture is the most common occupation in the world and is now regarded as an industry. The agriculture industry has grown tremendously over the years as new techniques and scientific advances have led to the increase in crop production.

Agriculture can be broadly classified into:
1. Agronomy: Study and development of techniques for improving agricultural practices.
2. Horticulture: Cultivation of fruits, vegetables, and ornamental plants.
3. Animal husbandry: Rearing and management of domestic animals.

1.2 CROP PLANTS
Crop plants are cultivated plants which are grown for food in the fields. Cereals constitute the largest category of crop plants. Cereals are plants from which food grains like rice, wheat, etc., are obtained. These food grains provide us with vital nutrients, such as carbohydrates, proteins, vitamins, minerals, and fibres.
There are about 30 major crop plants used by humans throughout the world. Some common crop plants grown and consumed in India are given in Table-1.

<table>
<thead>
<tr>
<th>Type of crop</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal crops</td>
<td>Rice, wheat, maize, barley, ragi</td>
</tr>
<tr>
<td>Pulses</td>
<td>Grams, peas, beans</td>
</tr>
<tr>
<td>Oilseeds</td>
<td>Mustard, groundnut, sunflower</td>
</tr>
<tr>
<td>Root crops</td>
<td>Sweet potato</td>
</tr>
<tr>
<td>Sugar crops</td>
<td>Sugarcane, beetroot</td>
</tr>
</tbody>
</table>

1.3 METHODS OF CROP PRODUCTION

Modern agriculture requires a stepwise, workable, scientific approach. It requires knowledge about the nature of the soil, the nutrients it contains, methods of ploughing, sowing, irrigation, pest control, etc. To obtain the best output from crop plants, the following steps should be followed:

1. PREPARATION OF SOIL

Preparation of soil is the process by which the soil is made suitable for sowing of seeds. This involves the following steps:

(a) Ploughing/tilling
Ploughing is the process of loosening and turning the soil for better percolation of water and air. It is done with the help of a plough driven by a tractor or by animals (oxen).

Advantages of ploughing
1. Loose soil allows roots to grow deep into the soil and support plants.
2. Ploughing aerates the soil. This allows the roots to breathe easily.
3. Ploughing also brings the nutrient-rich soil to the top so that plants can use these nutrients.
4. Manure and fertilisers mix better with ploughed soil.
5. Loosened soil helps in the growth of earthworms and microbes present in soil, which increases the fertility of the soil.
6. Loose soil helps sunlight to reach the deeper layers of soil and kill harmful microbes.

Agricultural implements used for ploughing

Plough: A plough is an agricultural implement which is usually driven by a tractor or by a pair of bulls or other animals. A plough may be made of wood or iron. At its one end is a strong triangular iron strip called ploughshare, which is connected to a long log of wood, called ploughshaft. There is a handle at one end of the shaft and the other end is attached to a beam which is placed on the animal's neck. Nowadays, disc plough is also used for ploughing.

Hoe: Hoe is a simple implement pulled by animals, used for weeding and loosening soil. It consists of a long rod of wood or iron fixed with a strong, broad and bent plate of iron at its end which works like a blade.

Cultivator: Nowadays, traditional ploughs and hoes have been replaced by cultivators, which are driven by a tractor. Usage of such machines saves labour and time.

(b) Levelling

Ploughed soil may have big lumps of soil called crumbs. Crushing of these lumps of soil and gently pressing the soil with a wooden or iron leveller is known as levelling.

The advantages of levelling include:
1. It helps to prevent soil erosion.
2. It ensures uniform irrigation.
3. It allows uniform mixing of fertilisers and manure.
4. Levelling also lessens the loss of moisture through evaporation.

2. MANURING

Before sowing of seeds, manures or fertilisers are added to the soil to increase its fertility. Addition of manure makes the soil spongy and helps it to hold air and water.
(a) **Manures:**
Manures are organic substances that supply almost all the nutrients required by plants. They are obtained from dead and decaying organic matter. Manures are of different types:

(i) **Compost manure:** It is obtained when farm waste like livestock excreta (cow dung, etc.), vegetable waste, domestic waste, sewage waste, straw, weeds, etc., are decomposed in pits. This process is known as composting. Compost is rich in organic matter and nutrients.

(ii) **Vermicompost:** Compost is also prepared by using earthworms to quicken the process of decomposition of plant and animal waste. This method is called vermicomposting.

(iii) **Farmyard manure:** It is prepared from cattle dung, residues like straw, leaves and branches of crop plants.

(iv) **Green manure:** Before sowing of crop seeds, some leguminous plants like sun hemp and guar are grown and then mulched by ploughing them into the soil. These green plants thus turn into green manure which helps in enriching the soil in nitrogen and phosphorous.

(b) **Fertilisers**
Fertilisers are chemicals that contain nutrients for plant growth. They are man-made and are produced as salts in factories. The most commonly used fertilisers are NPK fertilisers, which contain nitrogen, phosphorus, and potassium. As the organic component of soil is gradually getting reduced, sulphur is also now being recommended for ensuring soil nutrition.

**Disadvantages of fertilisers**
- Excessive use of fertilisers can damage soil by making it either too acidic or too basic.
- Fertilisers have also become a source of water pollution. Excess fertilisers get washed away by rainwater from crop fields into water bodies, harming aquatic plants and animals.
- Excess fertilisers also harm useful microbes in soil.

**Advantages of using manure over fertilisers**
- Manure enhances the water holding capacity of the soil.
- It makes the soil porous, making exchange of gases easy.
- It improves the texture of the soil.
- It increases the number of friendly microbes in soil.
3. **SOWING**

The process of putting seeds into the soil is called *sowing*. Before sowing the seeds, the following precautions must be taken:

- Seeds must be of good quality, healthy, disease resistant and pest free.
- Seeds must be sterilised by fungicides, antibiotics, etc.
- There must be proper spacing between the seeds to avoid competition for space, oxygen, water, nutrients, and light during the germination of seeds.
- Seeds should be sown at appropriate depth. If seeds are sown too deep, they will fail to germinate and if seeds are sown too close to the soil surface, they can easily be eaten by birds and other animals.

![Seeds should be sown at appropriate depth with proper spacing](image)

**Activity-1**

**To differentiate between healthy and unhealthy seeds**

**Procedure**: Take a beaker with some water. Put some gram seeds in it.

**Observation**: After a few minutes it is seen that some seeds start to float on top and some remain settled on the bottom.

**Inference**: Damaged or broken seeds are light, so float on the surface of water, whereas healthy seeds are heavier hence settle down at the bottom.

![Broadcasting](image)

Seeds can be sown by any of these methods:

(a) **Broadcasting**

This is a traditional method where seeds are scattered on the field by hand. The disadvantage of this method is that the seeds may not get sown at proper distances and at proper depths, resulting in wastage and reduced crop yield.

(b) **Traditional tool**

The traditional tool comprises of a funnel connected to two-three tubes that have sharp ends. Seeds put into the funnel travel into the tubes whose sharp ends penetrate into the soil and place seeds at proper depths. This tool also ensures the seeds are spaced correctly. Using the traditional tool may be better than broadcasting, but it requires more time and labour.

(c) **Seed drill**

The mechanism involved in seed drill is very similar to a traditional tool, but the efficiency is higher. The seed drill is connected to a tractor and has many tubes leading to the plough. This method saves time and labour and is more efficient than a traditional tool.
Advantages of seed drill over traditional tool
- Seeds are sown at proper distances and depths.
- Birds cannot eat the seeds as they are not exposed.
- Seedlings do not compete for air, space, nutrients and light.
- It saves time and labour.

(d) Transplantation
In plants like tomato, rice, chillies, etc., the seeds are not put in the field directly but are sown in seedbeds in nurseries. The seedlings are selected and then transplanted, i.e., transferred to the field.

Advantages of transplantation
- Only healthy seedlings are transferred through this method.
- It promotes better root and shoot development.
- It allows sowing of the plantlets at proper distances and proper depth.

**Definition**
The process of transferring healthy seedlings from a nursery to the field is called **transplantation**.

**Intext Questions**
- Q.1 Name two cereals, pulses, vegetables and fruits each that you eat regularly in your diet.
- Q.2 Mention the advantages of levelling.
- Q.3 Name different types of manures.
- Q.4 What is the difference between broadcasting and seed drill?

4. **IRRIGATION**
The process of supplying water to crops in a field through canals, reservoirs, tube wells, etc., is called **irrigation**. In India, farmers were at one time dependent only on rains for irrigation. But owing to the uncertainty of rainfall in our country, new methods of irrigation have been devised. The new methods involve use of tanks, dams, lakes, wells, etc., for irrigating crops.
The amount of water a field requires depends on the type of crop and the season. For example, rice seedlings are transplanted from nurseries into water-logged fields as they need constant supply of water. Wheat needs more water at the time of sowing, and flowering and development of grains.

(a) **Traditional methods of irrigation**
Traditional irrigation methods involve drawing water from wells, lakes, and canals by using cattle or human labour. The lifted water is then taken to the fields for irrigation.
Nowadays, apart from animals and humans, pumps are also being used for lifting water. These pumps are run by diesel, biogas, electricity, and solar energy. Although cheaper, traditional methods of irrigation are not very efficient.

Find out about some traditional ways of irrigation, like moat, rahat, dhekli, etc.
(b) **Modern methods of irrigation**

(i) **Sprinkler system**

This system is used in places where the land is uneven or the soil is sandy. The sprinkler system involves a network of vertical pipes that have rotating nozzles on top. The pipes are joined to the main pipeline at regular intervals. When the main pipe is turned on, pressurised water flows out through the rotating nozzles. The nozzles sprinkle water on crops evenly.

(ii) **Drip irrigation**

Drip irrigation is a useful technique in areas with water shortage. It involves a system of pipes and tubes that supply water to plants drop-by-drop, thereby minimising wastage. Although irrigation is essential for crop production, excessive irrigation can cause a lot of damage. Excess water can get logged in fields, cutting off air supply to crop roots.

5. **CROP PROTECTION**

A growing crop needs to be protected from other plants or animals that can damage it. Crop protection includes:

(a) **Weeding**

**Weeding** is the process of removal of weeds. Sometimes unwanted plants grow along with crop plants. These unwanted plants are called weeds. They are undesirable because they compete with the main crop for the nutrients, space, air, light and water and reduce the crop yield.

Different weeds grow in different fields and differ from season to season. The most common weeds are given in Table-2. Weeding can be done by the following methods:

(i) **Mechanical control**: Weeds are pulled by hand, trowel (**khurpa**), or harrow.

(ii) **Chemical control**: Certain chemicals like 2, 4-D, dalapon, metachlor, etc., are used for killing weeds. These are called **weedicides** or **herbicides**. They are specific in their action and do not destroy crop plants. However, many weedicides are non-biodegradable and can affect soil fertility.

(iii) **Biological control**: Some organisms which particularly feed on specific weeds are introduced into the fields in large numbers. They eat the weeds but do not damage the main crop. For example, cochineal insects are used to eradicate opuntia. Also, some crop plants like barley, soyabean, sunflower, etc., produce toxic substances in the soil that do not allow the growth of weeds.

<table>
<thead>
<tr>
<th>Common Indian name</th>
<th>English name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaulai</td>
<td>Amaranthas</td>
</tr>
<tr>
<td>Bathua</td>
<td>Pigweed</td>
</tr>
<tr>
<td>Javi</td>
<td>Wild oat</td>
</tr>
<tr>
<td>Congress grass</td>
<td>Congress grass</td>
</tr>
</tbody>
</table>
(b) **Pest control**
Crop plants may be attacked by pests, which may affect crop production. Pests include fungi, bacteria, viruses, rodents (such as rats), and insects (such as locusts, weevils, termites, etc.). Fungi cause diseases like smut and rust of wheat, blight of potato, etc. Bacteria cause blight of rice.

Pests can be controlled by:
(i) **Chemicals:** Chemical substances called *pesticides* are used for killing pests. Pesticides are of three types:
- Insecticides, which kill or harm insects such as locusts, weevils, termites, etc.
- Fungicides, which destroy fungi.
- Rodenticides, which kill rodents.

Pesticides can be sprayed by manually operated machines or low-flying aircrafts in the crop fields. Pesticides may also be added to the soil before sowing of seeds.

**Disadvantages of pesticides**
- They can kill useful insects like butterflies and honeybees.
- They are mostly non-biodegradable (for example DDT), therefore they can harm the environment.
- Pesticides get mixed in soil and get absorbed by the crops. When the crops are consumed by humans, the pesticides enter their bodies and cause harm.

(ii) **Biological control:** This method may be slow, but is a non-polluting and highly specific way of controlling pests:
- Products of biological origin known as *biocides* can be used to control pests. For example, hormones of female insects can be used to trap male insects. Biocides are very effective and do not cause any pollution.
- Birds can be scared away by placing scarecrows in fields.
- Some organisms, which eat pests but not crops, can be used to get rid of pests from the field.
6. **HARVESTING**

Harvesting is the process of collecting or gathering of matured crops. In India, harvesting of crops, especially cereal crops, takes place twice a year. The two main crop growing seasons in our country are called *kharif* and *rabi*. There is another seasonal crop, called *za?d/zayad*, which includes some vegetables and low grade cereals. Once the crops mature, they are harvested.

Harvesting includes threshing and winnowing.

(a) **Threshing**

After the crop is cut, grains are separated by threshing the plants on a stone or by making cattle walk over the crop. These days, machines called *threshers* are also used for this purpose. There are also machines called *combines* which can do both harvesting and threshing.

(b) **Winnowing**

The grains collected after threshing have some chaff which needs to be separated. This is achieved by *winnowing*. It is the process where grains are dropped from a height. The heavier grains fall directly to the ground, while the lighter chaff blows away and collects at a distance.

After a harvest, crop stubs are often left behind in the fields. These are usually burnt by farmers. But a better option is to let the stubs remain in the fields after harvest. The stubs can help minimise erosion, return nutrients to the soil, increase the amount of organic matter, raise the water holding capacity of the soil, and also curb the growth of weeds.

7. **STORAGE AND DISTRIBUTION**

As crop yield can vary from one season to another, food grains need to be stored for use in times of shortage. Usually, buffer (extra) stocks are maintained so that supply of grains is ample even if crop fails or yields lesser amount of grains in a particular season.

After crops such as wheat or rice are harvested, the grains obtained usually have high moisture content and need to be dried before they can be packed. Eventually, these grains are packed in gunny or jute bags and stored in silos, godowns, or granaries. Stored grains need to be inspected regularly for pests and microbes.

### Intext Questions

Q.1 How does drip irrigation help in reducing wastage of water?
Q.2 How does retaining stubs in the field after harvesting help farmers?
1.4 INCREASING CROP PRODUCTION

In addition to systematic agricultural practices, there are several other methods used to increase crop production.

(a) **Crop rotation**

Some plants, like wheat, rice, etc., consume large amounts of nitrogen from the soil. Once they are harvested, the soil is depleted of nitrogen and may not be suitable for plants which require more nitrogen. The farmers then grow a crop of leguminous plants, like pea beans, soybean and groundnut in the field. This is known as crop rotation.

Leguminous plants can utilise atmospheric nitrogen to produce nitrates and release them in the soil due to the presence of rhizobium bacteria in the root nodules. By this way, the soil becomes rich in nitrogen and ready for next crop of wheat or rice.

(b) **Mixed cropping**

When two or more crops are grown in the same field at the same time, it is known as mixed cropping. For example, cotton and groundnut, wheat and chick-pea, wheat and mustard are grown in the same field. The crops are chosen so that the waste products of one crop fulfill the requirements of the other crop.

(c) **Field fallow**

Field fallowing is a natural method for the improvement of the field in which no crop is cultivated for one or more seasons. Grasses and herbs grow on the field during this period and animals are allowed to graze. The excreta of the animals, remains of the crop and leftover grasses and weeds form humus in due course and replace the nutrients in the soil, making it fit for cultivation. This practice is not used any more, as other better and faster methods are available now for the improvement of soil.
(d) **High-yielding varieties (HYV)**

To increase crop production, we need to have crop plants with desirable characteristics. The crop plant should be resistant to diseases and drought and should be able to give higher yield. This is achieved by scientists known as plant breeders, who experiment with different varieties of plants to produce such plants having desirable characteristics through the process of plant breeding or hybridisation.

**Method of hybridisation**

- Two plants with desirable characteristics are selected. For example, one plant which gives higher yield but is susceptible to diseases and other plant which shows resistance to diseases.
- In case of bisexual flowers, to prevent self fertilisation, anthers of one variety of plants are removed by a process called emasculation.
- Pollens from the other variety of plants are transferred to the stigma of emasculated flowers.
- The seeds obtained after fertilisation are sown and the process is repeated for several generations to get the desired characters in the seed which is known as stock.

**GREEN REVOLUTION**

Dr. Norman E. Borlaug was able to bring a tremendous increase in wheat production in Mexico by the method of hybridisation in 1960s. Following him, Indian agriculturists imported high-yielding varieties from Mexico and cross bred them with Indian varieties of wheat. This resulted in tremendous increase in wheat production in India. This is known as the green revolution. Later on, hybridisation was carried out for other crops also like, rice, maize, etc.

**Table 5: High-yielding varieties of wheat, rice and maize.**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>Kalyan, Sonalika, Pratap-HD, Sonara-64, HD-2135</td>
</tr>
<tr>
<td>Rice</td>
<td>Basmati-307, IR-2H, IR-48, Jaya, Padma</td>
</tr>
<tr>
<td>Maize</td>
<td>Ganga Safed-2, Ganga-5, Deccan-101, Ganga-9</td>
</tr>
</tbody>
</table>

**Did You Know?**

High-yielding varieties of wheat known as Mexican varieties were brought from Mexico and improved in our country in 1960 which marked the turning point in Indian agriculture. These high-yielding varieties have made our country sufficient in food grains, bringing the green revolution.

**1.5 ANIMAL HUSBANDRY**

Early man was mainly dependent on animals for food. Later, he realised he could use animals to get wool, hide, leather, honey, etc. This led to domestication of animals.
Domestication is the taming of animals for some specific purposes. Dog was the first animal to be domesticated. Dogs were mainly tamed for companionship. Domesticated animals are also called livestock. The breeding, rearing and caring of livestock is called animal husbandry. It is considered a part of agriculture.

Some domesticated animals and their uses are:
1. **Cattle**: Cows, buffaloes, and bullocks are known as cattle. They form an important category of livestock. Cows and buffaloes provide milk and other dairy products. They are also known as milch animals. Bullocks are used in agricultural operations such as ploughing. The hide of cattle is also used to make leather products.
2. **Sheep and goat**: Sheep are reared for wool, meat, and skin. Goats are reared for meat, milk, hair, and skin.
3. **Poultry**: Poultry farming or rearing of poultry birds, like hen, chicken, ducks, etc., is done for meat and eggs.
4. **Fishery**: The practice of breeding and rearing of fish on a large scale is called pisciculture or fish farming. Fish are a very rich source of proteins. These are easily digestible and have great growth-promoting value. Oils obtained from some fishes are rich sources of Vitamin A and D.
5. **Apiculture**: Honeybees provide two important substances – honey and wax. Honey is a thick, sweet-tasting fluid produced from the nectar of flowers and used in many Ayurvedic medicines.

**Intext Questions**
- Q1: Name some milch animals.
- Q2: Name some useful animal products.
- Q3: What is apiculture?
- Q4: What is domestication?

**IMPORTANT TERMS**
- **Agriculture**: Science of growing plants and raising animals for food, clothing and other useful products.
- **Crop**: Plants of the same kind grown on a large scale for food, clothing, etc.
- **Drill**: A tool used to sow the seeds in line.
- **Cultivation**: Preparation of land for growing crops, harvesting of crops or plants.
- **Husbandry**: (Related to farming): The practice of cultivating land or rearing of livestock.
- **Irrigation**: Supply of water to crop plants through reservoirs, canals, wells, tubewells, etc.
- **Weeding**: Process of removing unwanted plants from crop or ornamental plants.
SUMMARY

1. The practice of rearing and management of plants and domesticated animals is called agriculture.
2. The plants which are grown and cared for in a field for food are called crop plants.
3. Two main seasons for cultivation of crops in India are *rabi* and *kharif*.
4. Horticulture is the branch of agriculture which deals with the cultivation of fruits, vegetables, flowers and ornamental plants.
5. Tasks involved in agriculture are preparation of soil, manuring, sowing, irrigation, crop protection, harvesting and storing.
6. Manures are organic substances obtained by the decomposition of dead and decaying matter and fertilisers are the chemicals produced in factories, used for enriching the soil.
7. Pests, fungi and bacteria attack plants, causing diseases, resulting in loss of food production.
8. Fungicides, antibiotics and pesticides are used in the field and in storage condition to kill harmful organisms.
9. Crop rotation, mixed cropping, laying the field fallow and use of high yielding varieties are some of the methods to increase crop production.
10. Animal husbandry is the science dealing systematically with rearing, improvement and care of domesticated animals.
11. Poultry farming, pisciculture and apiculture have improved food production tremendously.

Tasks for FA and SA

Q.1 MULTIPLE CHOICE QUESTIONS:

1. __________ is the branch of agriculture concerned with cultivation of fruits, vegetables and ornamental plants.
   (a) Horticulture  (b) Floriculture  (c) Agronomy  (d) Sericulture

2. __________ results in the loosening and mixing of soil.
   (a) Ploughing  (b) Levelling  (c) Irrigation  (d) Watering

3. Water logging results in the depletion of __________ in the soil.
   (a) sand  (b) clay  (c) nutrients  (d) water

4. Rodents can be killed by:
   (a) insecticides (b) pesticides (c) fertilisers (d) rodenticides

5. Proper caring and management of animals to maintain their health is known as:
   (a) apiculture (b) animal husbandry (c) pisciculture (d) agriculture

6. __________ variety of wheat caused green revolution in India.
   (a) Hybridised  (b) Fertilised  (c) Pollinated  (d) Polluted

Q.2 VERY SHORT ANSWER QUESTIONS:

1. __________ is the process of separating __________ from chaff.

2. Manures are mineral specific as they provide all the minerals needed by plants. True or false?

3. Broadcasting of seeds is done by a drill. Is it true?

4. The plants which are grown and cared for in a nursery for food are called crop plants. True or false?

5. Beneficial food component present in fish. __________

6. Method of growing different crops in the same area or land to replenish soil. __________

7. Control of pests without using chemicals. __________

8. Chemicals used to provide nutrients into the soil. __________

9. Method of irrigation using a network of pipes to save water. __________
Q.3 SHORT ANSWER QUESTIONS:
1. Although fertilisers provide specific nutrients, it is important to use manure also for better crop production. Why?
2. Write a note on ‘Green Revolution’
3. Why is weeding of crop fields essential?
4. What do you understand by the word livestock? Give some examples.
5. What do you understand by animal husbandry?

Q.4 LONG ANSWER QUESTIONS:
1. Explain the following terms:
   (a) Broadcasting of seeds
   (b) Drill sowing
   (c) Transplantation
2. What is irrigation? What is its importance?
3. What is harvesting? How many types of crops are harvested in India? Compare the different methods of harvesting.
4. List various methods of crop improvement.

HOTS Questions (Higher Order Thinking Skills):
1. How is horticulture different from agriculture?
2. Why is biological control method better than using pesticides?

Tasks for FA

A. Classroom Activity
   It takes a lot of people to complete food’s journey; from the farm to the consumer. Farmers, truckers, processors and grocers all participate in food’s journey. To understand it better, create four groups, each representing one part of food’s journey, i.e., farmers, truckers, processors and grocers. Consider few products like apples, raisins, cereals, as the products and take them through this “journey”. Distribute the “products” (cereal mix, peanuts) to the farmers’ group. After the farmers have harvested their crops, it is ready for the truckers to pick it up. The truckers load the product and deliver it to the processors. Let products be transferred from the farmer to trucker. The processor’s job is to “process” the raw product into “ready-to-eat” form. Processors then deliver the products to the grocer.
   The grocer is responsible for delivering products to the consumer. At every step, let each group explain their respective group’s contribution to the product’s journey.
   Note down all the relevant information in your notebook.

B. Conversational Activity
   Let all the students participate in the discussion regarding what or who else might be involved in the journey of product to the consumer, such as packaging, advertising, accountant, etc., in the above activity.

C. Exploration Activity
   Explore the internet and find information on the following:
   (i) Apiculture
   (ii) Sericulture, or
   (iii) Pisciculture
Talk to the people involved in various activities related to the breeding of concerned animal and find out the processes used. Also find out about more such practices of rearing animals to get some or many product such as aquaculture.

D. Experiment/Project

Food is an organic substance. It comes from living things, and living things are made of organic molecules. But not all food is grown organically. Most of the food is grown with the help of synthetic chemicals.

Read articles about organic farming, and note the advantages of organic produce. Compile all the information about organic farming in a file.

Value Based Questions:

Saurabh went to his native village with his grandmother in summer break. He noticed that farmers are all still using old traditional methods of farming. He requested the Sarpanch and organised a meeting where they discussed some new methods of farming. Saurabh explained them how they could have better yields from these methods.

Answer the following questions:

1. What value has Saurabh displayed?
2. Name any two such methods which farmers can use to enhance their yield.