

CROP PRODUCTION

NOTE FOR THE TEACHERS

Periods allocated to the topic - 12

- To understand different types of crops teacher should help students for collection of different types of grains.
- Try vermicomposting in the school to show the importance of organic manure and explain that it is better than chemical ones.
- Explain the students the adverse effect of DDT.

Think over the activities that you do during the whole day like brushing, taking bath, going to school, doing home work, eating, playing, etc. Have you ever thought about the energy that you get for doing all these activities? How do you feel energetic? It's the food from which you get all the energy to work, play and study.

Can you think of a day or two without having food? Have you ever thought from where does this food come? All the food that we eat come from plants and animals. You have learnt earlier about green plants which synthesize their food by the process of photosynthesis. Animals including man cannot make their food by themselves. They obtain food from plants.

It is easier to get food for a few person but if we have to provide food for the people of whole country, we will have to obtain it on a large scale. Hence regular production, systematic management and proper distribution of food is very important.

You must have read about the early man in your history books. Primitive man was basically a nomad, a gatherer and a hunter of food. He used to gather seeds, berries, leaves, edible roots, nuts and fruits of wild plants. He also hunted small animals for food using stone tools. Primitive man

suddenly observed that seeds on falling upon the soil start germinating and grow into plants. This gave him the idea of cultivation of plants to obtain food. Again he found that water was essential for the growth of plants, so he settled near water bodies like rivers, lakes etc. Thus, from a food gatherer, man became a food producer. This was the beginning of the **agriculture**. This happened around 10,000 years ago.

The word agriculture is derived from two Latin words, 'agre' meaning **field** and 'cultura' meaning to **cultivate**. The science and practice of farming and cultivation of **crop** plants is called **agriculture**.

In olden times, due to outdated agricultural implements, the production was less. But, nowadays new technologies have boosted agricultural practices and crop yielding along with rearing of livestock including poultry called **Animal husbandry**.

Man cultivates plants in the fields to obtain food such as cereals and pulses. Cereals are tall grasses from which nutritious seeds called **grains** are obtained on cultivation. Grains provide us carbohydrates, proteins,

Key Learning Points

- Production of crops
- Storage
- Improvement of crops
- Nitrogen cycle
- Nitrogen fixation
- Food from animals



Term Search

Crop – The plants of the same kind grown at a place.



INSIGHT

Oats and Rye were cultivated in Europe in about 1000 BC.

vitamins, minerals and fibres. Pulses are protein-rich seeds of leguminous plants. Vegetables and fruits are rich source of minerals and vitamins. He also grows plants for ornamental and decoration purposes under **Horticulture**.

ACTIVITY - 1

Aim: Make a herbarium by collecting and pasting some plants found from fields near your school and write the uses of different plants collected from the fields.



Term Search

Horticulture – Branch of agriculture that deals with production of vegetables, fruits, flowers and decorative plants.

AGRICULTURAL PRACTICES

The various tasks performed by the farmer to raise a good yield of crops are called **agricultural practices**. The plants grown and tended in a field are called **crop plants**.

For doing various activities in cultivation of plants, a farmer needs different types of tools. These tools are called **agricultural implements**.

Agricultural Practices At A Glance

TASKS	IMPLEMENTS USED	FUNCTION OF IMPLEMENTS
1. Preparation of Soil • Ploughing/Tilling • Levelling • Manuring	• Animal driven wooden or iron ploughs or machine driver tractor. • Tractor or animal driven iron or wooden levelers. • Manually or by drill • By hand or seed drills	• Pulverising, uprooting the stubbles • Making soil surface even for uniform irrigation • Making the soil spongy and airy
2. Sowing	• By hand or seed drills	Putting seeds in the prepared soil
3. Addition of Manure/ Fertiliser	• By hand or using drill or sprayer	Addition of nutrients needed by plants
4. Irrigation	• Sprinklers/wells/tubewells/canals	Supplying water to plants
5. Weeding	• Trowel • harrow • spraying weedicides	Removal of weeds (unwanted plants)
6. Crop protection	Sprayer/manual or knapsack sprayer-aerial spray by low flying helicopters.	Control of diseases caused by plant pests, bacteria, fungi etc.
7. Harvesting	• Sickle • Harvester • combine for both harvesting and threshing.	Reaping of crop plant
8. Threshing	• Manually • thresher • combine • animals	Separation of grains
9. Winnowing	• Winnowers • combine • thresher	Removal of hay and chaff
10. Storage	• Silos • gunny bags • clay and metal containers.	Storing grains for future buffer stock

Preparation of Soil

Before sowing the crop seeds, the soil of the field is loosened and over turned. This process is called **ploughing**.

Ploughing is done to facilitate ventilation in soil and make it suitable for the growth of microorganisms and other organisms like earthworm they make the soil fertile by decomposing the remains of plants and animals.

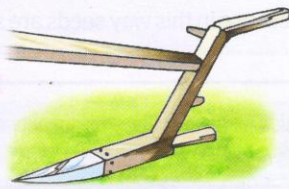


Your Wisdom

Earthworm is called as farmer's friend. Why?



Wooden soil plank used for breaking soil crumbs



Plough

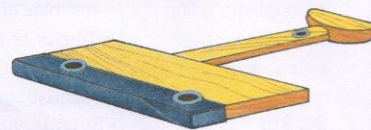
The instrument used for ploughing is called **plough**. Plough may be made of wood and iron or of the iron only. For ploughing of the soil, domestic animals like ox, camel are used. Now, in big farms the tractors are used for ploughing with cultivator which saves time and labour of ploughing manually. The process of making soil surface even and smooth is called **levelling**. The process is done with the help of wooden soil leveller. Levelling ensures uniform irrigation and distribution of minerals in the field. It helps to prevent soil erosion.

Sowing

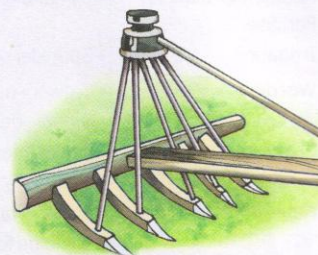
When soil is ploughed and levelled, seeds are sown in it. Before sowing seeds, selection of healthy seeds is done by putting seeds in water. Defective, floating seeds are rejected. The seeds which remain submerged in water are selected for sowing. The seeds should be sown at right depth in the soil. If sown at greater depth, they will not get sufficient air for respiration and on germination, the shoot will not come out of the soil. On the other hand, if seeds are sown on the surface, they will be eaten by birds. Also there should be proper spacing between the seeds. So that there is less competition for water, nutrients, sunlight, etc. Sowing can be done **manually** or by using a **seed drill**.



Ploughing by oxen



Wooden soil leveller used for levelling the soil



Seed drill



Manual method

Sowing of seeds



Modern method

The method of sowing seeds manually by hand in the field is called **broadcasting**. Sowing of seeds with the help of seed drill is a better method because in this way seeds are sown at proper depth and distance.

ACTIVITY - 2

Aim : Visit at least three agricultural fields or farms near your locality and observe them. Prepare a table/chart on different irrigation practices and sources of water.

Term Search

Sowing – The process of putting seeds into soil.

Transplantation

It is the process of transferring healthy seedlings from the plot (nursery) to the main field.

Transplantation is common in the cultivation of paddy and vegetables. During transplantation seedlings are planted in a well prepared field at a proper distance in rows.

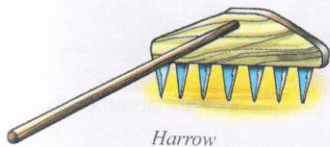
This ensures that plants are able to receive sufficient light, water and space.



Transplantation

Weeding

The removal of unwanted plants (weeds), growing along with desired crop, from the field is called **weeding**. The most common weeds are *Amaranthus (chaulai)*, *Chenopodium (bathua)*, *Convolvulus (hiren khuri)*, wild oat, grass.



Harrow



Trowel

Weeds are required to be removed because they compete with crop plants for their basic needs like water, sunlight, nutrients and space. Different types of weeds grow naturally with different crops during the different seasons of the year. Weeds often grow faster than the main crop. The process of removing weeds from the field is done by two ways :

- (i) **Manually** : by pulling out the weeds with the help of trowel (*khurpa*).
- (ii) **By use of weedicides** : certain chemicals called weedicides are sprayed in the fields with the help of a sprayer. These chemicals check the growth of many weeds but do not affect the main crop. Some common weedicides are 2,4-D; Dalapon; Metachlor and Siniazine. Weedicides are poisonous chemicals. Therefore, the grains as well as other crop products must be washed thoroughly before use. During spraying of these chemicals, the farmers should also take care and cover their mouth and nose.



INSIGHT

Excessive use of fertilisers damages the chemical nature of the soil. Excess of nitrogen fertilisers increases the alkalinity of the soil.

Let us Revise

1. What is agriculture ?
2. List the name of any four agricultural practices.
3. What are the advantages of ploughing ?
4. Why is levelling done ?
5. Define transplantation.

MANURES AND FERTILISERS

Manure

Like other plants, crop plants obtain their mineral nutrients from the soil. Continuous growing of crop in the field causes deficiency of mineral

Term Search

Weedicides – The chemicals that are used to kill weeds.



INSIGHT

Compost is prepared by digging a pit and all the organic waste is buried in it for few days. The waste matter is allowed to rot by microbial action of bacteria and fungi present in the soil. Microorganisms start decomposing the organic substances and convert them into inorganic nutrients called **Compost**. This compost is an excellent fertiliser.



INSIGHT

Bio-fertilisers are the living organisms that can increase fertility of the soil. Mostly, bacteria and fungi are used as bio-fertilisers such as Rhizobium. Nitrogen-fixing bacteria are used as bio-fertilisers which enrich the soil.

nutrients in the soil. So, the manure is added to the soil to make up the deficiency of mineral nutrients, this process is called **manuring**. Manure is made of waste products of animals and plants such as cow dung, urine, plant wastes, night soil & some organic wastes.



Fertilisers stored in sacks

Fertiliser

The addition to manures, fertiliser is another way of enriching the soil with nutrients. **Fertilisers** are mixtures of chemical compounds rich in nitrogen, phosphorus and potassium. These are made in factories rather than animal wastes compost is a natural fertiliser.

Differences between manures and fertilisers.

Manures	Fertilisers
1. They are not soluble in water. So they are not easily absorbed by the roots of the plants.	1. They are soluble in water and are absorbed by the plants easily.
2. These are organic substances.	2. These are inorganic substances.
3. They are not nutrient specific.	3. These are nutrient specific.
4. These are bulky and hence difficult to store and transport.	4. These are in powdered form hence are not bulky and can be easily stored and transported.
5. Excessive use does not harm the soil texture, they provide humus to the soil.	5. Excessive use can change the chemical composition of the soil and also pollute water.
6. They restore the soil texture and help in water retention.	6. They may damage the soil texture and make it more porous.

ACTIVITY - 3

Aim: To show growth of seedlings with manure and fertiliser.

Materials Required: Germinated gram seeds, three pots, fertiliser, manure, soil, water.

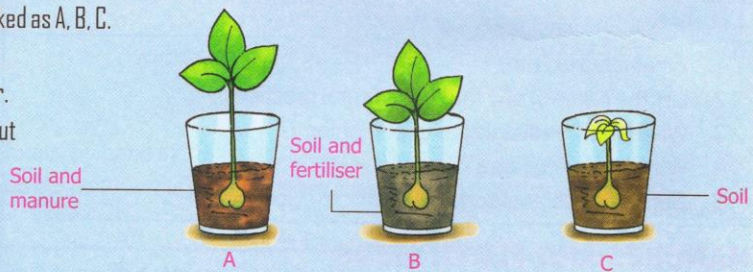
Procedure: Take three pots marked as A, B, C.

- (i) In pot 'A', put soil and manure.
- (ii) In pot 'B', put soil and fertiliser.
- (iii) In pot 'C', put some soil without adding anything.

Plant the germinated gram seedling in three pots and pour equal amount of water

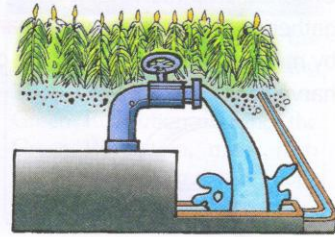
to A, B and C pots. Keep them for some days, water them regularly and observe their growth.

Observation: This activity shows that fertilisers help farmer to get better yield of crops and manure improve soil texture and water retaining capacity.



Irrigation

Water is necessary for the growth and development of plants. If plants do not get sufficient water, they shrivel up. Watering of crop plants is called **irrigation**. The major source of water is rainfall. However, amount of rain varies and does not always supply the right amount of water at the right time. Therefore, farmers should have an alternative source of water near their fields like tubewells, rivers, lakes and ponds, which deliver water through canals. The amount of water supplied should be in adequate amount as excess of water harms the crop plants. Continued water logging increases the amount of salt in the soil and retards the growth crops.



Watering of crop plants – irrigation



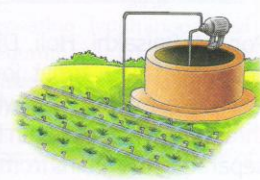
Water wheel (Rahat)



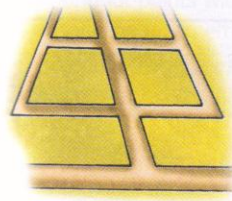
Lift irrigation (Dhekli)



Swinging basket (Moat)



Drip irrigation



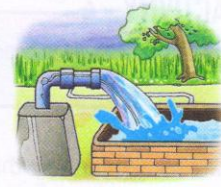
Furrow irrigation



Field bunds



Sprinkler



Tubewell

Various methods used for irrigation practices by farmers.

Let us Revise

1. What are the things that you can add to the soil for healthy growth of plants ?
2. In places of less rainfall, how can you supply water to the crops ?
3. Write two differences between manures and fertilisers.

Protection of Crop

Pests are those organisms which damage crops and make them unfit for human consumption. The most common pests are insects, rats, rabbits and birds. Microbes like bacteria, fungi and viruses also cause diseases to crop plants. Some chemicals called **pesticides** are sprayed on crops to destroy pests. Birds can be scared away from the fields by installing scare-crows.



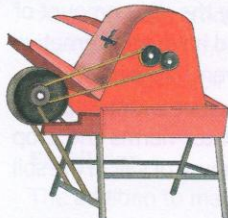
Crop is being sprayed with an insecticide or a pesticide

Harvesting, Threshing and Winnowing

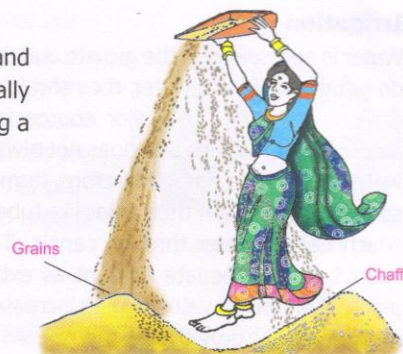
Once the crop matures, it is harvested. The process of cutting and gathering a crop is known as **harvesting**. It is done either manually by means of sickles or by some other mechanical means by using a harvester.



Sickle



Thresher



Separating grains and chaff by winnowing

Pongal, Baisakhi, Holi, Diwali, Nabanya are the special festivals associated with harvesting and are celebrated with great joy in different states of India. The harvested crop may contain all kinds of incredible matter. The whole process of separation of grains from the harvested crop is known as **threshing**. Threshing can be done manually or using the machine – **thresher** or **combine**. The process of separating the grains from the **chaff** with the help of wind is called **winnowing**.

The stem is cut into small pieces, stored as hay in haystacks and fed to cattle as food. Hay which is given to cattle is called **fodder**.

ACTIVITY - 4

Aim : Visit a village near to your town when the wheat is harvested and see how the farmers clean, collect and store the wheat.

Storage

Grains obtained by threshing are dried in the open to prevent the growth of microorganisms on them. The dried grains are stored in suitable containers called **bins** or in **jute bags**. The storage of grains on large scale is done in **granaries** and **silos**. The storage is necessary to protect the grains from pests, insects and rats. It is important to store grains dry. Moisture and humidity can grow fungi or moulds.

IMPROVEMENT OF CROPS

The population of our country is increasing at a very fast rate. Agricultural products must also increase. Most impressive growth in food grain production in our country occurred during 1960-1980. We became self sufficient in food grains. The period is called as the Golden Era.

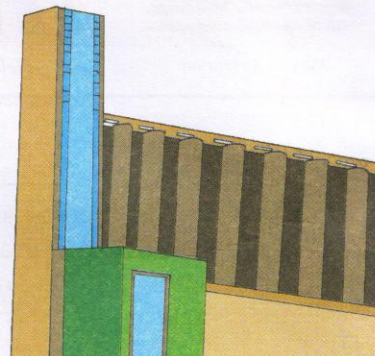
In India, there are two main seasons for cultivating crops - **rabi** and **kharif**. Rabi is the **winter crop**, which is planted at the beginning of winter season and harvested in March or April. For example – wheat. Kharif is the summer crop, which is planted at the beginning of monsoon season and harvested at the end of monsoon season. For example – Rice, maize, jowar, cotton, groundnut and pulses.

Term Search

Chaff – Outer covering of grain.

Rabi crops – The crops grown during the non-monsoon season (between November to April).

Kharif crops – The crops grown during the Summer and monsoon season (between June to October).



Silos

The following are the factors which are responsible for increased production of crops :

1. Use of improved seeds/crops developed by plant breeding.
2. Improvement in the soil fertility by using fertilisers.
3. Protection of plants from pests by using pesticides.
4. Control of plant diseases.
5. Better storage facilities.

Any single variety of a plant species may not possess all the useful characters. Most of these can be brought together into one variety by **hybridisation**. Hybridisation is done by crossing two or more varieties having the desired genes. The hybrids thus produced are then selected, crossbred repeatedly to obtain a variety of maximum yield and utility.

When the sturdier plant is crossbred with the better yielding variety or is **hybridised**, a new daughter plant is produced which combines the qualities of both parents.

A plant derives its nutrition largely from the humus layer and the top soil. Repeated farming depletes the soil of its nutrients supply and reduce crop growth. To prevent this, it is advisable to cultivate two different types of plants alternately. Example - Maize and wheat are grown alternately with *Leguminous* plants like groundnut. The groundnut plants with its nitrogen fixing bacteria, enriches the soil with nutrients. Rotating different crops thus ensures natural method of replenishment of nutrients. This method is called **crop-rotation**.

Mixed Cropping is done in order to save time and labour, groundnut and cotton are often grown together in mixed-cropping.



INSIGHT

Tremendous increase in the production of food grains during 1960-1980 period is known as Green Revolution. During the Green Revolution, many high yielding disease resistant crops were introduced in India.



INSIGHT

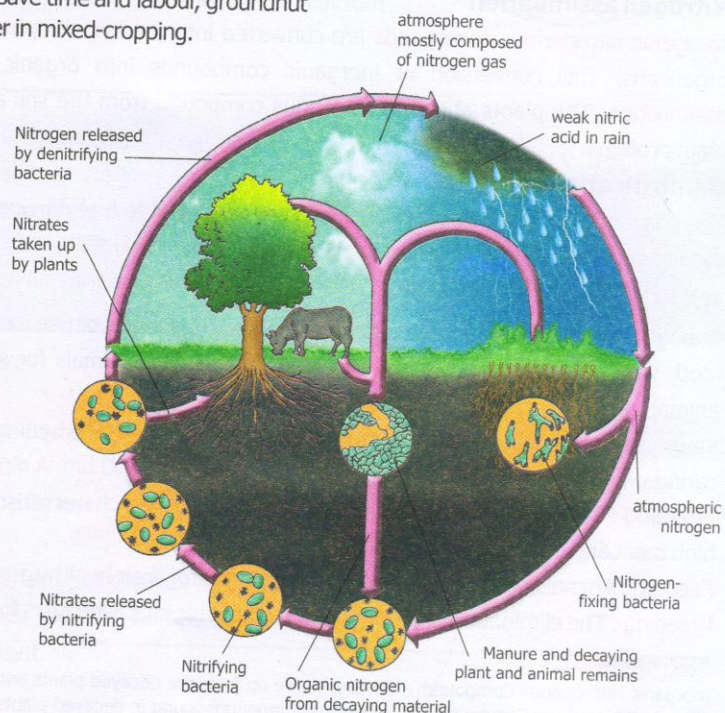
By repeating leguminous and non-leguminous crops in the same field the fertility of the soil is maintained.

NITROGEN CYCLE

Air contains about 78% nitrogen in atmosphere. Water bodies also contain nitrogen. Nitrogen is an essential component of proteins, vitamins and nucleic acids which are present in all living things. The cyclic process by which nitrogen element is circulated continuously through the living and non-living components of the biosphere is called **nitrogen cycle**.

Nitrogen cycle has the following steps :

1. Nitrogen fixation
2. Nitrogen assimilation
3. Denitrification





INSIGHT

Wheat and rice use up large amounts of nitrogen from soil. Legumes fix atmospheric nitrogen (converting free nitrogen into its compounds is called nitrogen fixing.) This increases the nitrogen content of the soil.

Nitrogen fixation

It is of two types :

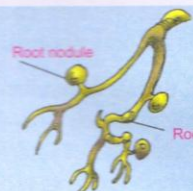
- (i) **Atmospheric Nitrogen Fixation** : During lightning in the sky when temperature is high, the nitrogen gas present in the atmosphere reacts with oxygen to produce oxides of nitrogen which gets dissolved in rainwater forming dilute nitric acid. This reacts with alkalies of the soil to form nitrates.
- (ii) **Biological Nitrogen Fixation** : Atmospheric nitrogen is converted into nitrogen compound by living organisms. Nitrogen fixing bacteria like Rhizobium and Clostridium, which lives in the root nodules of leguminous plants convert atmospheric nitrogen into nitrates.

ACTIVITY - 5

Aim : To observe the root nodules of a leguminous plant.

Materials Required : A leguminous plant (pea or bean), blade, water and microscope.

Procedure : Dig up a legume plant such as pea, bean, etc. Wash the soil from the roots and check the nodules and its colour. Make section of nodules with help of your teacher and observe under microscope.



Nitrogen assimilation

Inorganic nitrogenous compounds are converted into **organic compounds** that become a part of living organisms. This conversion of inorganic compounds into organic compounds is called **nitrogen assimilation**. The plants absorb nitrogenous compound from the soil and water and convert them into plant proteins.

Denitrification

The conversion of nitrate salt which is present in the soil to free nitrogen gas is called **denitrification**. It is carried out in the soil by bacteria called **Pseudomonas**.

ANIMAL HUSBANDARY

Though plants are main source of food and other substances of use for man but animals are also used for food, wood, leather, meat, eggs, etc. Man domesticate animals for specific purpose. All domesticated animals used by man are called **livestock**.

Steps needed to be considered in animal husbandary are : breeding, feeding, weeding, heeding and caring.

Breeding : The method of producing animals with desired characteristics. Through breeding, we can get high meat and milk yielding animals by selective breeding.

Feeding : Animals have to be fed with balanced diet for their healthy growth and development.

Weeding : The elimination of harmful and undesirable characteristics for next generation.

Term Search

Inorganic Nitrogenous Compound – Nitrates made up from the decayed plants and animals.

Organic Nitrogenous Compound – Nitrogenous compounds found in decayed plants and animals.

Heeding and caring : The proper care and management of animals to ensure their better health.

Cattle

Cows, buffaloes and bullocks are known as **cattle**.

Use of cattle

- (i) Cows and buffaloes provide milk and other dairy products.
- (ii) Bullocks are used in agricultural practices such as ploughing.
- (iii) Cow dung is a very good source of manure and '**Gobar Gas**'.

Poultry

Poultry farming or rearing of poultry birds like hen, chicken, etc. is done in poultry farms.

- (i) These birds are reared for meat and eggs.
- (ii) Poultry products are rich source of animal fats, proteins and vitamins.
- (iii) Poultry birds breed faster.

Egg

Hen starts laying egg at the age of six months. The egg laying bird is known as **broody hen**. The egg has a yellow portion in centre which is called the **yolk** and is rich in fats and lipids. The white portion is rich in proteins called **albumin**. The egg shell is made up of calcium carbonate.

ACTIVITY - 6

Aim : To differentiate between a spoilt egg and a healthy egg.

Materials Required : Some eggs, water, gas stove.

Procedure : Take some eggs from the poultry farm. Heat water to about 50°C to 60°C in a vessel. Put the eggs into the warm water. Observe after a few minutes.

Observation : The spoilt egg floats on the surface while healthy egg remains underwater.

Fishery

Fish is a very rich source of proteins and is easily available. Oil obtained from some fishes are rich in vitamin A and D. India is very rich in both fresh water fishes as well as marine fishes.

Honeybees

Honeybees provide us two important substances honey and wax. Since these bees provide us honey they are named as **honey bees**. Bees are economically very important.

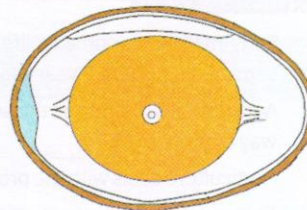


INSIGHT

Rearing of chicken, ducks and geese, etc is called poultry farming.



Chicken



Egg



Fishery



INSIGHT

Rearing and management of fishes for large scale production is called pisciculture.



Honeybee

There are three categories of bees.

- (i) Worker
- (ii) Queen bee
- (iii) Drones

In large scale, it is done by keeping the bees in large artificial beehives in **apiaries**.

Honeybee suck nectar of flowers and keep it in their beehives. Honey is a mixture of sugar, minerals, water and enzyme. Honey is used for:

- (i) preparing Ayurvedic drugs.
- (ii) antiseptic in ornaments.
- (iii) enzyme present in the honey which helps in digestion.
- (iv) beewax is used for making cosmetics, ointments, candles, etc.

Quick Review

- Early man led a nomadic life and mainly subsisted on hunted animals. As he learnt agriculture, he started settling down 10,000 years ago.
- Agriculture is defined as the science of raising food crops and other crops useful to man. It has changed man's way of life.
- Horticulture deals with the production of vegetables, fruits, flowers and decorative plants.
- Crop is defined as the cultivated produce from the ground.
- To raise a good crop different agricultural practices are done by farmers.
- Before sowing the seeds preparation of soil is necessary.
- Transplantation is the process of transferring healthy seedlings from a nursery to the main field.
- Manures and fertilisers are used to enrich the soil.
- Crops have to be protected from various diseases caused by pests. The pests can be killed by using chemicals called pesticides.
- Crops are harvested and threshed manually or with the help of machines called combine. Part of the harvested produce in the form of grains and fodder are stored by farmers and the remaining sold in market in silos.
- Crop improvement can be achieved by three methods :
 - (i) Plant introduction
 - (ii) Selection
 - (iii) Hybridisation
- Cultivation of hybrid varieties with desired characters has been mainly responsible for increasing food production in India, and this leads to the green revolution.
- The cyclic process by which nitrogen element is circulated continuously through the living and non-living components of the biosphere is called nitrogen cycle.
- Rearing of chicken, ducks, geese, etc. is called poultry farming.
- Rearing and management of fish for large-scale production is called pisciculture.

KEY WORDS

Agriculture	: The practice of farming and cultivating of crop plants.
Animal husbandry	: The rearing and caring of animal to obtain food on large scales.
Agricultural implements	: Tools and machinery use for agricultural practices.
Crop plants	: The plants grown and tended in a field on large scales.
Plough	: An instrument used for ploughing.
Levelling	: The process of making soil surface even and smooth.
Broadcasting	: The method of sowing seeds manually by hand in the field.
Compost	: In organic nutrients formed by the decomposition of organic matters by microorganisms under a covered pit.
Irrigation	: Watering the crop plants.
Harvesting	: Cutting and gathering of crops.

EXERCISES

A. Multiple Choice Questions.

Tick (✓) the correct option :

- The science of agriculture includes —

<input checked="" type="checkbox"/> a. Management of plants and animals	<input type="checkbox"/> b. Management of plants	<input type="checkbox"/>
<input type="checkbox"/> c. Management of animals	<input type="checkbox"/> d. Management of humans.	<input type="checkbox"/>
- Transplantation is done in the case of —

<input type="checkbox"/> a. Wheat	<input type="checkbox"/> b. Paddy	<input type="checkbox"/>
<input type="checkbox"/> c. Maize	<input checked="" type="checkbox"/> d. Barley.	<input type="checkbox"/>
- Weeds can be defined as —

<input type="checkbox"/> a. Useful plants present in the field	<input type="checkbox"/> b. Undesirable plants present in the field	<input type="checkbox"/>
<input type="checkbox"/> c. Plants that cannot be used at all	<input checked="" type="checkbox"/> d. Undesirable insects present in the field.	<input type="checkbox"/>
- Manures are —

<input type="checkbox"/> a. Organic in nature	<input type="checkbox"/> b. Inorganic in nature	<input type="checkbox"/>
<input type="checkbox"/> c. Organic as well as inorganic in nature	<input checked="" type="checkbox"/> d. None of above.	<input type="checkbox"/>
- To improve the varieties of crop the technique employed is —

<input type="checkbox"/> a. Transplantation	<input type="checkbox"/> b. Broadcasting	<input type="checkbox"/>
<input type="checkbox"/> c. Hybridisation	<input checked="" type="checkbox"/> d. Cultivation.	<input type="checkbox"/>
- Cereals generally provide —

<input type="checkbox"/> a. Proteins	<input checked="" type="checkbox"/> b. Sugars	<input type="checkbox"/>
<input type="checkbox"/> c. Fats	<input type="checkbox"/> d. Vitamins.	<input type="checkbox"/>
- Which method, according to you, can bring about the maximum increase in crop production in our country in future ?

<input type="checkbox"/> a. Increasing land under cultivation	<input type="checkbox"/> b. Using more manures and fertilisers	<input type="checkbox"/>
<input type="checkbox"/> c. Less wastage in storage	<input checked="" type="checkbox"/> d. Using better varieties of crop plants.	<input type="checkbox"/>
- The plant roots contain nitrogen fixing bacteria _____

<input type="checkbox"/> a. Orange	<input type="checkbox"/> b. Pea	<input type="checkbox"/>
<input type="checkbox"/> c. Mango	<input checked="" type="checkbox"/> d. Tomato.	<input type="checkbox"/>

9. _____ does not include Agricultural practices.

- a. Irrigation b. Marketing
 c. Harvesting d. Multiple cropping.

10. _____ is the process of loosening and turning of the soil.

- a. Threshing b. Ploughing
 c. Levelling d. Manuring.

B. Alternative Response Type :

True or False Type :

1. Earthworm is friend of the farmer.
 2. Weedicides make the weeds grow well.
 3. Canals, wells and rains are the sources of water for irrigation.

Right or Wrong :

1. Crop rotation help to increase the fertility of soil.
 2. Crop can be damaged by excess supply of water.

Yes or No Type :

1. The function of manures and fertiliser are different.
 2. The removal of husk from grains is called threshing.

C. Analogy Type :

1. Biopesticide : Neem leave :: Gobar gas _____
 2. Compost : Organic waste :: Fertiliser _____
 3. Animal husbandry : Live stock :: Horti culture _____

D. Matching Type (Multiple matching):

Column-I	Column-II	Column-III
(1) Ploughing	(a) By hand or Sprayer	(i) Putting seeds in the prepared soil
(2) Sowing	(b) Sprinklers and tubewells	(ii) Addition of nutrient needed by plant
(3) Adding manure	(c) Animal man driven tractor	(iii) Supplying water to plant
(4) Irrigation	(d) Silos ginny bags	(iv) Storing grains for future.
(5) Storage	(e) By hand or seed drills.	(v) Uprooting and stubbles.

1. 2. 3. 4. 5.

E. Fill in the blanks :

1. The domestication of plants is called _____.
 2. The growing of same kind of plants is called _____.
 3. Levelling is done by _____.
 4. Ploughing helps to _____ the soil.
 5. Sowing of seeds is done with the help of a _____.
 6. Excessive water of plants leads to _____.
 7. Unwanted plants which grow along with main crop are called _____.
 8. The chemical used to kill weeds are called _____.
 9. The machine used for cutting and threshing of crops is called _____.
 10. Large scale storing of grains is done in _____.

F. Very Short Answer Type Questions :

1. Define agriculture.
 2. What is sowing ?
 3. Which season is suitable for *rabi* crops ?
 4. Name two *kharif* crops.
 5. What is irrigation ?
 6. What are manures ?
 7. Name some weeds which grow naturally in the fields.
 8. Give example of two weedicides.
 9. What are granaries ?
 10. What is hybridisation ?

G. Short Answer Type Questions :

1. Name two crop plants for each of the following :
(i) Pulses (ii) Plantation crops
2. What is crop rotation ?
3. What is animal husbandary ?
4. What is pisciculture ?
5. Mention two ways in which weeding can be done.
6. How can pest be controlled ?
7. Why is the depth at which seeds are planted important ?

H. Long Answer Type Questions :

1. Write a short note on preparation of soil ?
2. What are the differences between manure and fertiliser ?
3. What is Green Revolution ?
4. How is transplanting useful to the farmer ?
5. What is mixed cropping ?
6. Explain in detail how nitrogen is fixed.
7. Draw a diagram to show Nitrogen Cycle.
8. Why should grains be dried before storage ?
9. Some seeds are given to you to grow. What factors will you keep in mind ?

ACTIVITY CORNER

Quiz Questions:

1. Green revolution was a result of crop improvement or hybridisation. (True/False)
2. Humans settled down to live in one place only after they learnt to grow crops. (True/False)
3. *Kharif* crops need more water than *rabi* crops. (True/False)

Group Discussion:

- Get information about the harvest festivals celebrated in different states of India and discuss about their importance in the class.
- Discuss in the class how crop production can be improved.
- Discuss the reason for keeping the storage area dry and clean.

Think and Tell:

Think of some irrigation practices and sources of water around your city.

Find Out from Your Surroundings:

Visit to a nursery and note how seeds or seedlings of different plants are grown.

Do it Yourself:

From the atlas find out the names and location of different dams built on the major rivers in different states of our country. Water stored in these dams is released into the fields of nearby areas through the canals. Make a chart of all the information. Prepare a picture by different pulses.

Play & Learn:

Collect six types of grains like wheat, rice, jowar, bajra and pulses. Know their names. Now blindfold your friend and ask him to identify the names of grains by touching it.

DISCOVERY

M.S. Swaminathan (1925)

He is an agriculture scientist. He is known as the father of 'Green Revolution in India' for his leadership and success in introducing and further developing high yielding varieties of wheat in India. His vision was to rid the world of hunger and poverty.

