

# 1 What is Agriculture?

Paheli and Boojho visited *sabjimandi* to buy vegetables and fruits for their daily consumption. There they saw a variety of vegetables and fruits. They asked the fruit and vegetable vendors about where these fruits and vegetables came from. They were told that these were supplied by the fruits and vegetable growers.



*Fig. 1.1 Vegetables and fruits in sabjimandi*

Have you or anyone in your family ever grown any vegetables? Will you be able to supply some of your home-grown vegetables to your neighbours? To supply them regularly, one would need to grow them on a larger scale, which would require a large area. Many of you might have seen big fields — may be while travelling in a train or in and around villages.

When one kind of plant species is cultivated on a large scale in a vast field, it is called a **crop**. For example, crop of paddy means that only paddy is grown in the field at one time.

**How are the requirements for food, including fruits and vegetables, of the large population of our country met?**

**Can families who do not have farms grow vegetables at home?**



You know, I  
read a very  
interesting  
book called  
*Animal Farm*  
by George  
Orwell.



5Fs of  
agriculture  
are Food  
& Fodder;  
Fibre; Forest;  
Flower and  
Fuel.

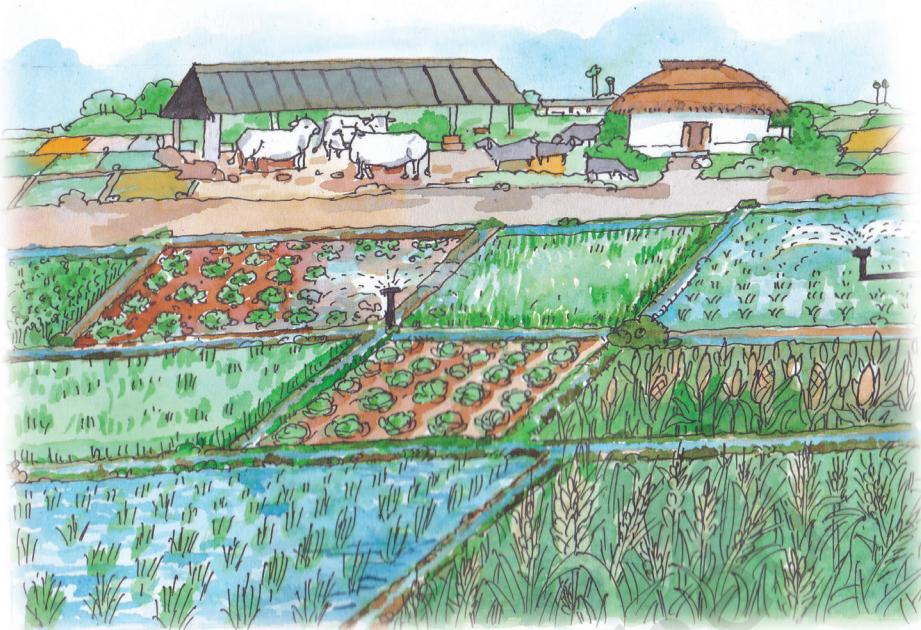


Fig. 1.2 Agricultural farm

Does Fig. 1.2 look like a farm? There are many divisions in this farm. In such a farm, different cereals (paddy, corn and wheat), pulses, oilseeds, fruits and vegetables, and other crop plants are grown on a large scale.

Did you know that there are special farms where animals are reared? The produce from these animals are used by humans everyday. Try and complete the table below:

Table 1: Useful supplies of agriculture

Name of the crop cultivated	Useful supplies	Name of the animal reared	Useful supplies
Paddy		Cow and Buffalo	Milk, ghee, butter, cheese
Cotton		Goat	
Tea		Sheep	
Sugarcane		Camel	

The systematic cultivation of plants and rearing of animals on a large scale is known as **agriculture**. We have seen till now that agriculture satisfies most of our needs for food and non-food products.

**Table 2**

Agricultural Products	
Food	Cereals, pulses, fruits, vegetables, honey, milk, egg, sugar, spices, etc.
Non-food	Fibre, timber, leather, manure, etc.

### 1.1 MAJOR CROPS OF INDIA

A large number of crops are grown in India. If you think of the variety of crops grown from Kashmir to Kanyakumari and the western coast of Gujarat to the extreme north-eastern state of Arunachal Pradesh, you will find a huge variation. Try to find out which crop is grown in a particular region and the climatic conditions in that area. Can you relate the growing conditions of the crop with the climatic and soil conditions? You will find that the soil and climatic conditions are favourable for a particular crop. For this reason there is a variation in crops of different regions.

Ask your friends which region of the country they belong to. During the lunch time you might have shared food with them. Did you notice that their food preparation and habits are different? Have you ever thought what can be the reason for that? If you learn about the crops produced in different parts of the country, you will find that some specific crops are grown more there than in the other parts. You will also note that the crops that are grown abundantly in a particular region are generally used as staple food by the people of that area.

**Table 3: Some common crops grown in India**

Food crops	
Cereals	Rice, wheat, oats and barley
Millets	Maize, sorghum, pearl millet
Pulses/legumes	Chickpea, pigeonpea, moong
Oilseed crops	Mustard, sunflower, soybean, groundnut
Root crops	Sweet potato, carrot, radish
Tuber crops	Potato, Tapioca
Sugar crops	Sugarcane, beetroot
Fodder crops	Berseem
Fibre crops	Cotton, jute
Plantation crops	Tea, coffee, rubber, banana, coconut



Fig. 1.3 Cotton crop



Fig. 1.4 Cereals



Fig. 1.5 Pulses



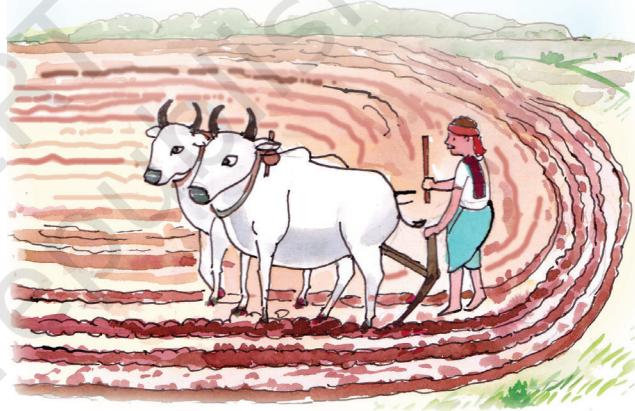
Fig. 1.6 Oil Seeds



1. Tilling (breaking of soil into smaller pieces) with the help of tiller



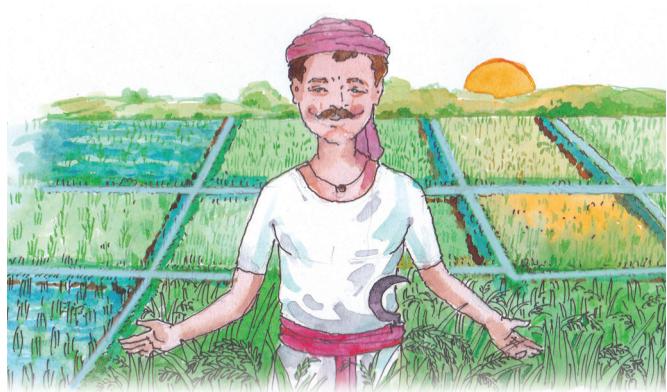
2. Soil preparation (adding manure and fertilisers)



3. Soil preparation (ploughing)



4. Sowing of seeds



5. Irrigation



6. Protection—Spraying pesticides/  
bio-pesticides



7. Harvesting—Cutting of crops  
Threshing—Removal of grains from the chaff



8. Transportation of agricultural commodities



9. Storage—Keeping the crop safe in store



10. Happy and healthy production and high earning

Fig. 1.7 (1–10) Pictorial story of farming

Fibre crops are a source of fibre used in making textiles, for example, cotton, jute, etc.

We get a variety of cooking oils from different oilseed crops like groundnut, mustard, soybean and sunflower. Oil extracted from oilseeds, forms an important component of our diet and serves as raw material for the manufacturing of hydrogenated oils, paints, varnishes, soaps, lubricants, etc. Oil cake is the residue after the oil is extracted, which forms an important cattle feed and manure.

Plantation crop is specifically grown for widespread commercial use such as tea, coffee, cocoa, rubber, coconut, banana, etc. India is a leading tea producing country in the world and is famous for its tea gardens in Assam and Darjeeling in West Bengal. Tea is processed by drying tender leaves of tea plants. Coffee is grown in the hills of Karnataka. There are large coffee estates in the hills of Western Ghats. Did you know that the coffee you drink comes from processing coffee beans?

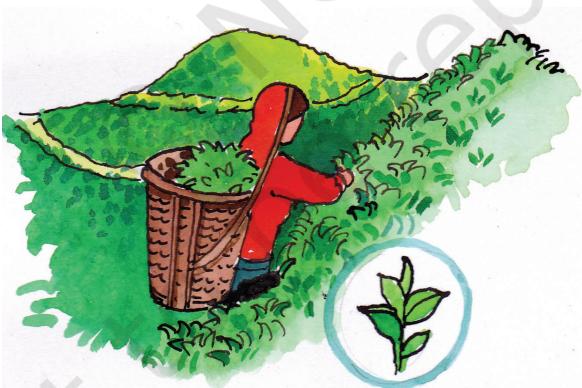


Fig. 1.8 (a) Tea plantation



Fig. 1.8 (b) Coffee plantation

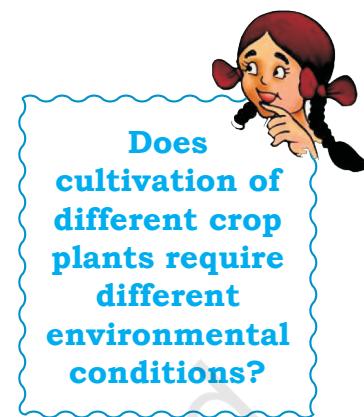
Horticulture includes the small scale gardening of annual and perennial plants for production of flowers, fruits, vegetables, medicinal herbs, etc., under farming.



Fig. 1.9 (a) Orange fruit tree



Fig. 1.9 (b) Medicinal herb  
(*Mentha* species)



### Activity 1.1

- Find out any two cereals and pulse crops grown in your area.
- Match the following.

1	Jute	A	Wool
2	Animal	B	Millet
3	Rubber	C	Manufacturing of bags
4	<i>Ragi</i>	D	Food crop
5	Wheat	E	Plantation crop

## 1.2 CROP SEASONS IN INDIA

India is a country of diverse crop seasons. All crops do not grow in the same season. Some crops grow in summer, while others in winter. In India, crops are grown in three different seasons *viz.* *kharif*, *rabi* and *zaid*.

Let us try to find out the crops grown in different crop seasons.

Table 4

Crop Seasons	Sowing	Harvesting	Crops grown
<i>Rabi</i>	September–October	April	Wheat, mustard, chickpea, barley, gram, pea, linseed, mustard, lentil, potatoes



<i>Kharif</i>	June–July	October–November	Rice, cotton, <i>moong</i> bean, <i>urad</i> bean, maize, <i>jowar</i> , <i>bajra</i> , groundnut
<i>Zaid</i>	March–April	May–June	Cucurbits, muskmelon, watermelon, cucumber, ladyfinger

### Activity 1.2

- Collect various types of grains from a grocery shop and bring in the class.
- Take a wool ball and stick the wool on the boundary of all states in the map of India.
- Use a blindfold one by one and identify grains of various crops by touching, feeling and smelling them.

(Teacher can facilitate by writing the names of the identified crops on the blackboard.)

- Touch the map of India and identify the state where that particular crop identified by you is grown on a large scale.
- Stick the grains in the concerned state on the map where it grown on a large scale and used as a staple crop.



Fig. 1.10

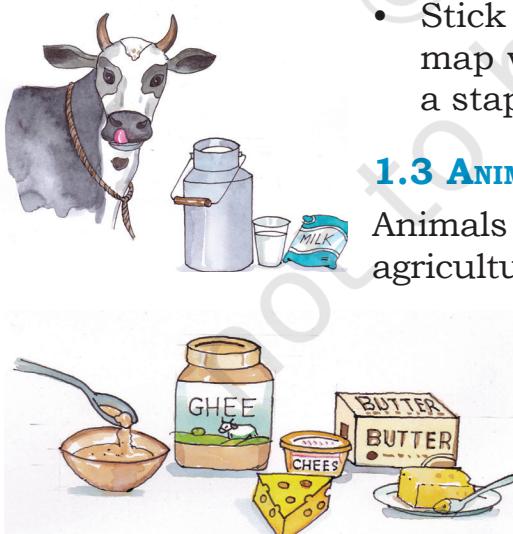


Fig. 1.11 Milk and milk products

### 1.3 ANIMALS IN AGRICULTURE

Animals have always been an integral part of Indian agriculture. Many types of animals are reared in the country for various purposes. Animals such as cow, buffalo, goat, sheep, camel, yak and horse constitute the livestock wealth of our country. Animals provide milk, meat, wool, etc., which are essential for humans. Some animals such as bullocks, camels and horses help in land ploughing and transportation.

Also, dung and urine of some animals are used to improve the soil fertility. On the other hand, feed and fodder for animals are obtained from agricultural plants. Thus, animals and farming of edible crops support each other. They play a very important role in providing food material and generating employment and income, especially in rural areas.

#### 1.4 WHAT IS LIVESTOCK?

The farm animals such as cow, buffalo, pig, elephant, sheep, etc., domesticated and reared for profit, are referred to as livestock. Millions of people depend upon livestock for their livelihood, especially the rural community.

Their products such as milk, butter, curd, cheese, paneer and ghee are sold in the market as they have high nutritional values.

Milk giving animals in India are cow, goat, buffalo, camel, etc. Different breeds of these animals are found in different parts of India. There is a variation in the milk production from different breeds. Breeds of animals imported from other countries are known as **exotic breeds**. Here, we will discuss some of the high milk yielding exotic breeds of cows.

**Holstein-Friesian** is a native cow of Holland. The colour of the skin is generally white and black. It yields up to 7,000 litres of milk per lactation. It is usually selected for dairying.

**Jersey** is a native cow of Jersey Island (largest of the Channel Islands between England and France). It is generally small. The colour of the skin is black, red

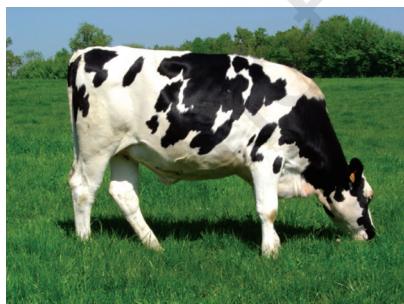


Fig. 1.13 (a) Holstein-Friesian



Fig. 1.13 (b) Jersey



Fig. 1.12 Milking process



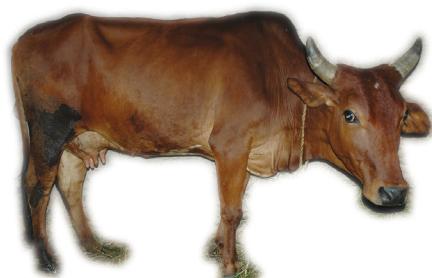
Does the  
milk of  
Indian breeds  
provide more  
nutrients?



*Tharparkar*



*Sahiwal*



*Red Sindhi*



*Gir*

*Fig. 1.14 Breeds of desi cow*



*Goat*

*Camel*

*Fig. 1.15 Other animals in farming*

or white spotted. Each cow yields about 4,500 litres of milk per lactation.

**Buffaloes** are one-third of the total cattle population in India, but they produce almost three times more milk and contain 50% more fat. Buffaloes have a greater resistance to diseases and have a long lifespan. The skin of buffalo is an important raw material for the leather industry.

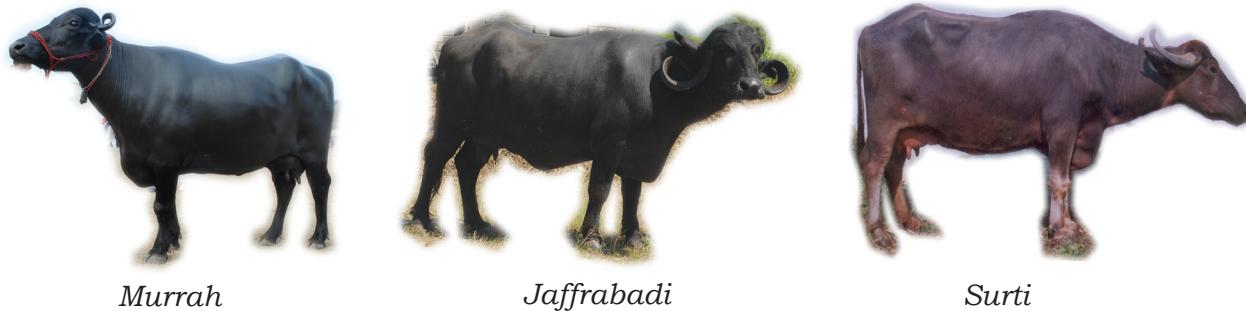


Fig. 1.16 Breeds of desi buffalo

### 1.5 ROLE OF ANIMALS IN INDIAN AGRICULTURE

Rearing and breeding of animals to get milk, meat and wool is called **animal husbandry**. In India, a large number of farmers depend on animals for their livelihood. In agriculture, bullocks are the major source of power. They help in ploughing agricultural fields, harvesting of crops and transportation of agricultural produce. The bullocks save a lot of fuel, which is required for the use of tractors, combine-harvesters, etc.

### 1.6 OTHER AGRICULTURAL PRACTICES

Rearing of domestic chicken, turkey, fowl and ducks for eggs and meat is called **poultry farming**.

**Bee-keeping** for honey production and rearing of silkworm for production of silk fibres are other practices in agriculture.

#### Activity 1.3

- Make a visit to an animal farmyard. Talk to the farm manager and get information about the *desi* (indigenous) and foreign breeds of any one livestock in your area.
- Collect information about how they are useful in agriculture.



Fig. 1.17 Animal farmyard



**According to the news headlines, heavy and continuous rains affected wheat crop at the time of harvest.**

### 1.7 IMPORTANCE OF AGRICULTURE

In India, agriculture is a major industry creating vast employment opportunities. It helps in maintaining healthy environment by providing food to the human beings, birds, animals (both domestic and wild) and all organisms on the earth. It provides raw materials like leather, lard (fat), etc., for many industries. Our country is a leading producer of many agricultural products in the world such as tea, coffee, pulses, milk, rice, wheat, etc. The diverse geographical conditions of India due to its large area is exceptional for agriculture because it offers numerous favourable conditions for growing different crops. There are plains and fertile areas with long growing seasons and wide variations in climatic conditions. Besides this, India has been steadily making ground-breaking efforts to increase production by using science and technology.

### 1.8 CONSTRAINTS IN AGRICULTURE

Among various challenges, global climatic change is the recent one faced by agriculture. It has been anticipated that its effect on agriculture would be massive. It is predicted that due to climate change, temperature would increase from normal temperature to 2°C higher, there would be an increase in sea level, and more powerful cyclones, irregular rainfall, etc., may be expected. These changes would badly affect the crop production.

### 1.9 EFFECT OF CLIMATE CHANGE ON LIVESTOCK AND ANIMAL HUSBANDRY

Climate change affects livestock both directly and indirectly. Change in air temperature, humidity, wind speed and other climate factors affect the growth of animals, milk production, wool production and reproduction of animals. Animals suffer from heat-related diseases, infectious diseases and get disturbed due to extreme weather conditions, which affects the quality of their products.

## 1.10 IMPACT OF AGRICULTURAL PRACTICES ON ENVIRONMENT

Indiscriminate use of fertilisers and pesticides to enhance crop production leads to pollution of air, water and soil. The pesticide residues in the soil may escape to groundwater or reach rivers and waterbodies by **run-off**. Certain greenhouse gases such as methane emitted from agricultural lands also pollute the air. Deforestation is yet another undesirable practice which may lead to increased pollution, soil erosion and desertification.

To overcome the above problems, good agricultural practices can be implemented. We shall now discuss some exemplary practices.

1. Use organic manure as far as possible or judicious use of chemical fertilisers.
2. Use of pesticides can be minimised by using biological control methods, for example, allowing useful insects to destroy harmful pests.
3. Crop rotation is another environment-friendly practice which restores soil fertility and reduces population of harmful insects.

### GLOSSARY

*Cattle*— Animals kept in a farm to get milk or meat or for carrying heavy loads.

*Desertification*— Land degradation in which relatively dry area of land becomes increasingly arid, typically losing its bodies of water as well as vegetation and wildlife.

*Lactation*— A period during which milk is secreted by mammary glands of females of mammals after they give birth.

*Livelihood*— Source of income.

*Pesticides*— Synthetic chemicals to kill pests.

*Run-off*— Draining away of water from the surface of an area of land.

*Staple food*— Food eaten as main food by large number of people.

*Soil erosion*— Washing away of top soil.



## WHAT HAVE WE LEARNT?

1. Agriculture is the systematic cultivation of useful crops and rearing of animals.
2. In India, agriculture is the major source of livelihood.
3. A crop is one type of plant cultivated on a large scale in a vast field.
4. Crops fall into three categories in India, based on their growing season. These are *kharif*, *rabi* and *zaid*.
5. Livestock play an important role in agriculture and economy of the country.
6. A large number of farmers depend on animals for their livelihood.
7. In India, both indigenous and exotic breeds of cattle are used for agriculture.
8. Climate change affects the health of livestock and makes them vulnerable to various diseases.
9. Global climatic change is one of the major challenges faced by agriculture.
10. Conventional agricultural methods have significant impact on the environment.

### Something to think about!

- Can we think of replacing non-degradable plastic cutlery with edible organic cutlery made of cereals?
- Find out how many such things you can replace in your day-to-day life to reduce pollution.
- Make a survey in a marriage and other functions and find out the number of cutlery used and make an average account of how edible organic cutlery may help in reducing pollution.



## Exercises

### 1. Choose the correct option to fill in the blanks.

- i. *Rabi* crops are usually sown in \_\_\_\_\_ (October to December/January to March).
- ii. The \_\_\_\_\_ (oilseed/cotton seed) is also used as part of fodder for cattle.
- iii. Cotton is a \_\_\_\_\_ (*kharif/rabi*) crop.
- iv. \_\_\_\_\_ is an indigenous breed of cow. (*Sahiwal/Jersey*)

### 2. Read the statements and indicate 'true' or 'false'.

- i. Cow provides milk, which in turn provides milk products.
- ii. Holstein-Friesian is a native cow of Holland.
- iii. Sheep are a rich source of meat and wool in hilly areas.
- iv. Jersey is an exotic breed of cow.

### 3. Complete the following table. Fill the names of the products and their source.

Wool	Sheep	Milk
	Hen	Silk
	Camel	Fish
Curd		Goat

### 4. Give one word for the following.

- i. Which exotic breed of cow yields 7,000 litres of milk per lactation?
- ii. What is systematic growing of useful plants and rearing of animals called?
- iii. What are tea, coffee, rubber and banana crops called?

### 5. Answer the following questions. (Short answer)

- i. What are agricultural products? Name any two.
- ii. What are the harvesting months of *zaid* and *kharif* crops? Give five examples for each of them.

- iii. In which state of India do you find large coffee plantations?
- iv. What is animal husbandry? Why is bullock important in agriculture?

#### **6. Answer the following questions in detail.**

- i. What is agriculture? What is the importance of agriculture in India?
- ii. What is a crop? Differentiate between *rabi* and *kharif* crops.
- iii. What do you understand by crop seasons? What are the different crops grown and harvested in these crop seasons?
- iv. Describe the common food crops grown by the Indian farmers.
- v. Describe plantation or commercial crops giving examples.
- vi. What is horticulture? Which type of plants are grown under horticulture? Give some examples.
- vii. Differentiate between the features of the two exotic breeds of cow you have learnt.
- viii. What is the effect of climate change on livestock and animal husbandry?
- ix. Describe how conventional agricultural methods affect the environment.

#### **7. Project Activity**

- i. Do some research work and find out the geographical conditions such as temperature, rainfall and soil required for growing wheat. Prepare a report on that.
- ii. On an outline map of India, indicate the states where rice and wheat are used as staple foods.

#### **8. Group Activity**

- i. Visit a nearby poultry farm or collect information about poultry using Internet. If you plan to develop a poultry farm in the backyard of your house, how will you go about it?

- ii. Divide yourselves into three groups; collect information on any three sections of animal husbandry such as rearing of silkworm, bee keeping and cattle farming. Share your findings in a group discussion.

### **9. Field Survey**

Plan a visit to an agricultural farm and find out which environment friendly methods are being followed by farmers to cultivate their crops. Prepare a report on your visit.