

Land, Soil, Water, Natural Vegetation and Wildlife Resources

In a small village in Tanzania, Africa, Mamba gets up very early in the morning to fetch water. She has to walk a long way and returns after a few hours. She then helps her mother in the house and joins her brothers in taking care of their goats. All her family owns is a piece of rocky land around their small hut. Mamba's father can barely grow some maize and beans on it after toiling hard. This is not enough to feed their family for the whole year.

Peter lives in the heart of the sheep rearing region in New Zealand where his family runs a wool processing factory. Everyday when he returns from school, Peter watches his uncle taking care of their sheep. Their sheep yard is situated on a wide grassy plain with hills in the far distance. It is managed in a scientific way using the latest technology. Peter's family also grows vegetables through organic farming.

Mamba and Peter stay in two different parts of the world and lead very different lives. This difference is because of the differences in the quality of land, soil, water, natural vegetation, animals and the usage of technology. The availability of such resources is the main reason places differ from each other.

LAND

Land is among the most important natural resources. It covers only about thirty per cent of the total area of the earth's surface and all parts of this small percentage are not habitable.

(iii) The uneven distribution of population in different parts of the world is mainly due to varied characteristics of land and climate. The rugged topography, steep slopes of the mountains, low-lying areas susceptible to water

Let's do

Observe the land, type of soil and water availability in the region you live. Discuss in your class, how it has influenced the lifestyle of people there.

Do you know?

Ninety per cent of the world population occupies only thirty per cent of land area. The remaining seventy per cent of the land is either sparsely populated or uninhabited.



Fig. 2.1: Salzburg in Austria

Notice in how many ways the land has been used in the above picture.

logging, desert areas, thick forested areas are normally sparsely populated or uninhabited. Plains and river valleys offer suitable land for agriculture. Hence, these are the densely populated areas of the world.)

LAND USE

Land is used for different purposes such as agriculture, forestry, mining, building houses, roads and setting up

of industries. This is commonly termed as **Land use**.

Can you list out the different ways in which Mamba's and Peter's family use their land?

The use of land is determined by physical factors such as topography, soil, climate, minerals and availability of water. Human factors such as population and technology are also important determinants of land use pattern.

Land can also be classified on the basis of ownership as – private land and community land. Private land is owned by individuals whereas, community land is owned by the community for common uses like collection of fodder, fruits, nuts or medicinal herbs. These community lands are also called **common property resources**.

People and their demands are ever growing but the availability of land is limited. The quality of land also differs from place to place. People started encroaching the common lands to build up commercial areas, housing complexes in the urban areas and to expand the agricultural land in the rural areas. Today the vast changes in the land use pattern also reflect the cultural changes in our society. Land degradation, landslides, soil erosion, desertification are the major threats to the environment because of the expansion of agriculture and construction activities.

Notes

Let's do

Talk to some elderly person in your family or neighbourhood and collect information about changes in the land use over the years, in the place where you live. Display your findings on a bulletin board in your classroom.

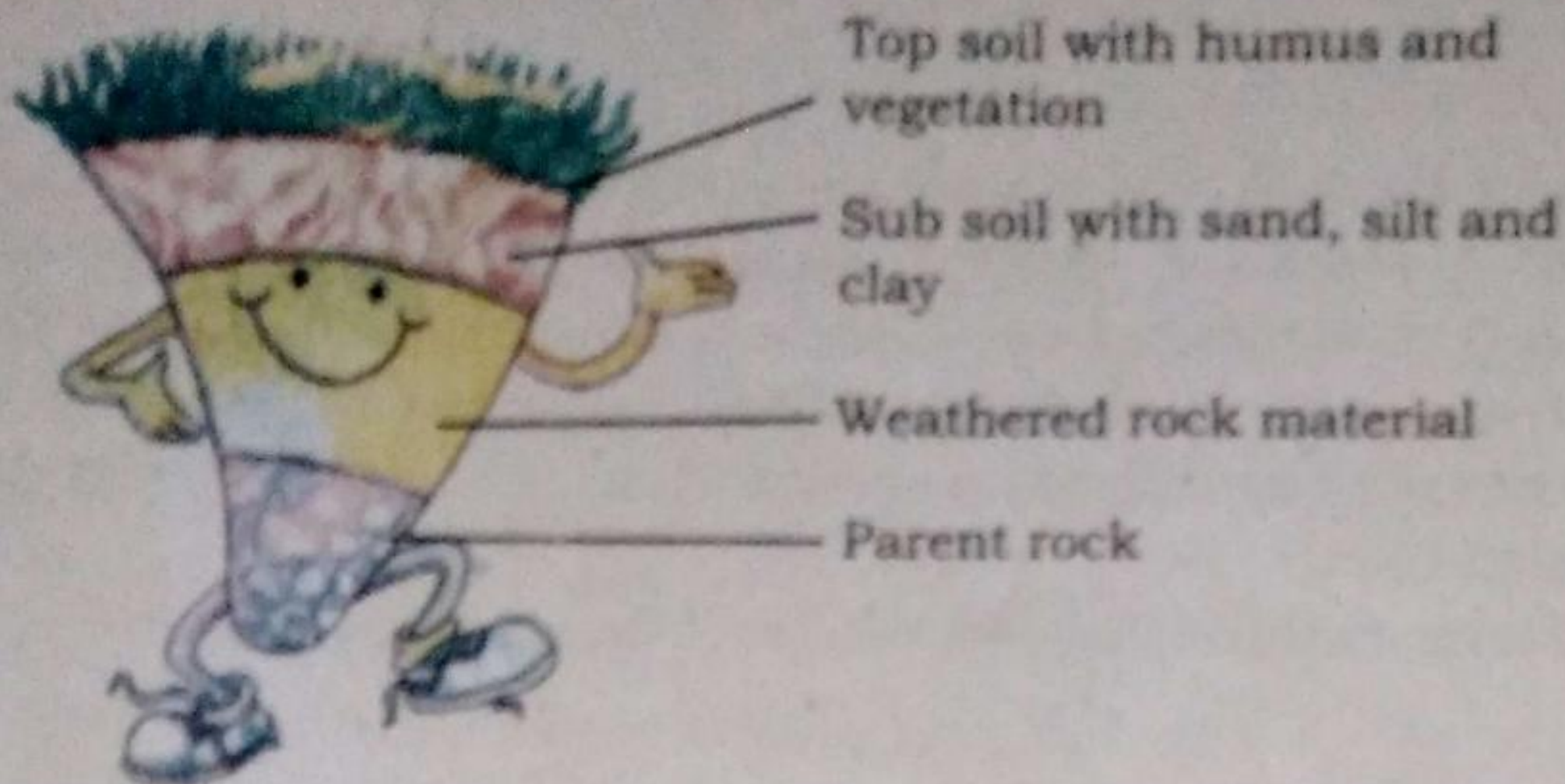


Fig. 2.3: Soil Profile

Do you know?
 It takes hundreds of years to make just one centimetre of **soil**.

FACTORS OF SOIL FORMATION

(The major factors of **soil formation** are the nature of the parent rock and climatic factors. Other factors are the topography, role of organic material and time taken for the composition of soil formation. All these differ from place to place.)

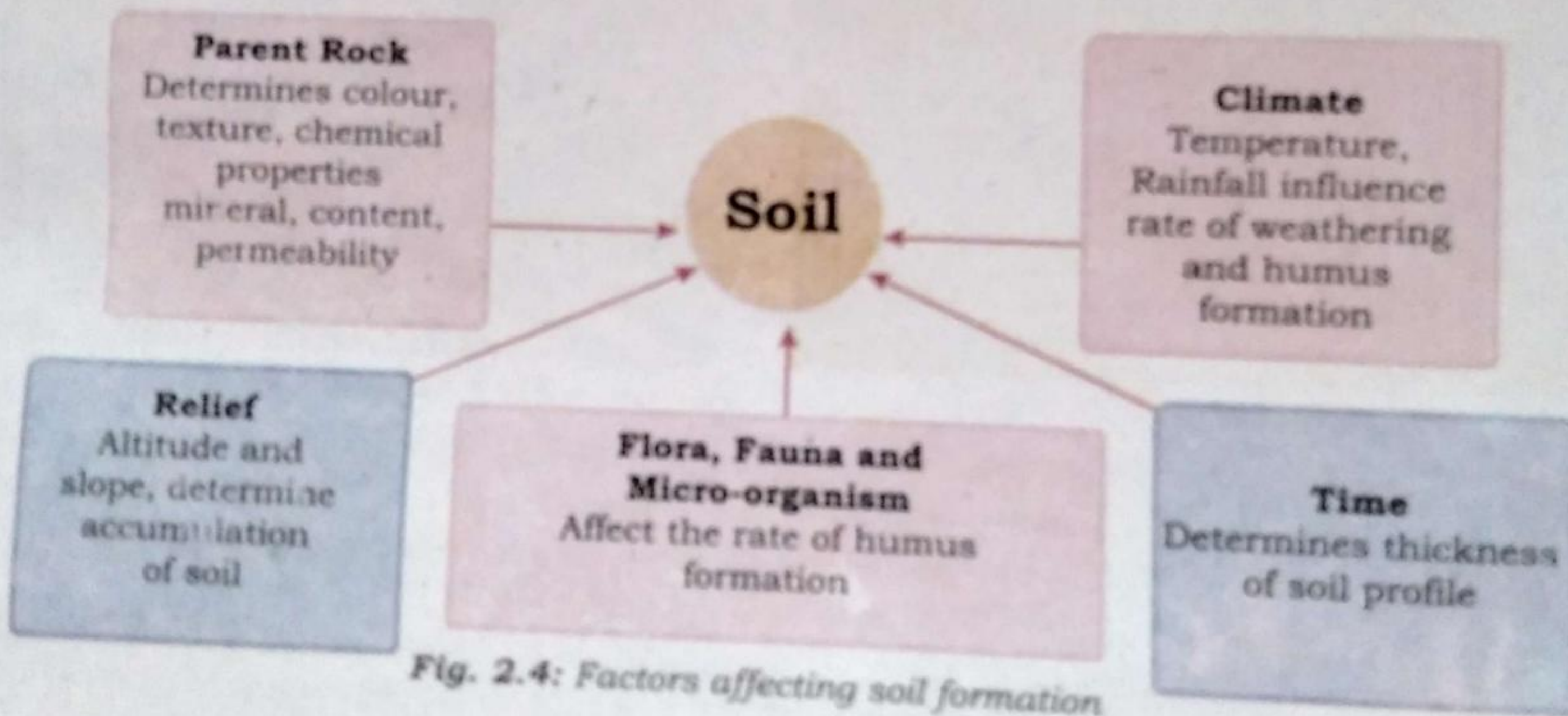


Fig. 2.4: Factors affecting soil formation



DEGRADATION OF SOIL AND CONSERVATION MEASURES

Activity

In India soils could be alluvial, black, red, laterite, desertic and mountain soil. Collect a handful of different types of soil and observe. How are they different?

Soil erosion and depletion are the major threats to soil as a resource. Both human and natural factors can lead to degradation of soils. Factors which lead to soil degradation are deforestation, overgrazing, overuse of chemical fertilisers or pesticides, rain wash, landslides and floods.

Some methods of soil conservation are listed below:

Mulching: The bare ground between plants is covered with a layer of organic matter like straw. It helps to retain soil moisture.

Contour barriers: Stones, grass, soil are used to build barriers along contours. Trenches are made in front of the barriers to collect water.

Rock dam: Rocks are piled up to slow down the flow of water. This prevents gullies and further soil loss.



Fig 2.5: Terrace Farming



Fig 2.6: Contour Ploughing



Fig 2.7: Shelter Belts

Terrace farming: Broad flat steps or terraces are made on the steep slopes so that flat surfaces are available to grow crops. They reduce surface runoff and soil erosion (Fig. 2.5).

Intercropping: Different crops are grown in alternate rows and are sown at different times to protect the soil from rain wash.

Contour ploughing: Ploughing parallel to the contours of a hill slope to form a natural barrier for water to flow down the slope (Fig. 2.6).

Shelter belts: In the coastal and dry regions, rows of trees are planted to check the wind movement to protect soil cover (Fig. 2.7).

Most of these chemicals are non-biodegradable and reach human bodies through water. Water pollution can be controlled by treating these effluents suitably before releasing them in water bodies.

(2) Forest and other vegetation cover slow the surface runoff and replenish underground water. Water harvesting is another method to save surface runoff. The canals used for irrigating field should be properly lined to minimise losses by water seepage. Sprinklers effectively irrigate the area by checking water losses through seepage and evaporation. In dry regions with high rates of evaporation, drip or trickle irrigation is very useful.] The valuable water resource can therefore be conserved by adopting these means of irrigation.



Fig 2.9: A Water Sprinkler

NATURAL VEGETATION AND WILDLIFE

Some school children were visiting an exhibition on handicrafts. The articles in the exhibition were collected from different parts of the country. Mona picked up a bag and exclaimed, "This is a beautiful handbag!" "Yes, it is made from Jute," the teacher said. "Do you see those baskets, lamp shades and chairs? Those are made of canes and bamboos. In the eastern and north eastern humid regions of India, bamboo grows in plenty." Jassy was excited to see a silk scarf. "See this beautiful scarf". The teacher explained that silk is obtained from silk worms that are bred on Mulberry trees. The children understood that plants provide us with many different products that we use in our day-to-day life.

Natural vegetation and wildlife exist only in the narrow zone of contact between the lithosphere, hydrosphere and atmosphere that we call **biosphere**. In the biosphere living beings are inter-related and interdependent on each other for survival. This life supporting system is known as the **ecosystem**. Vegetation and wildlife are valuable resources. Plants provide us with timber, give shelter to animals, produce oxygen we breathe, protects soils so



Fig 2.10: Silk Worms

Do you know?

Rain water harvesting is the process of collecting rain water from roof tops and directing it to an appropriate location where it is stored for future use. On an average, one spell of rain for two hours is enough to save 8,000 litres of water.

(iv)

leopard, ostrich and peacock. These can be conserved by increasing awareness.

(National parks, wildlife sanctuaries, biosphere reserves are made to protect our natural vegetation and wildlife. Conservation of creeks, lakes, and wetlands is necessary to save the precious resource from depletion)

There is a balance in the environment if the relative number of species is not disturbed. Human activities in several parts of the world have disturbed the natural

Forest Fire

Forest fires kill 41 in Greece

500,000 flee California fires

California breathes easy as fire tamed

High-tech firefighter

The plane

with matches started massive US fire

Sparked One Of The California Fires That Destroyed 2,100 Homes, Left 14 Dead

fire started in California? Could it be avoided?

region of fauna and flora. It occurs mainly due to

ter due to carelessness of people. bitants, mischief makers, miscreants etc.

1. ll co-ordinated network of observation points, unication network.

habitats of many species. Due to indiscriminate killing several birds and animals have either become extinct or are on the verge of extinction.

(iv)

(Awareness programmes like social forestry and Vanamahatasa should be encouraged at the regional and community level. School children should be encouraged to bird watch and visit nature camps so that they appreciate the habitat of varied species.)

Many countries have passed laws against the trade in wild animals as well as killing of birds and animals. In India, killing of lions, tigers, deers, great Indian bustards and peacocks is illegal.

An international convention CITES has been established that lists several species of animals and birds in which trade is prohibited. Conservation of plants and animals is an ethical duty of every citizen.



Fig. 2:19: A herd of Elephants in Kaziranga National Park

Do you know?

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. It aims to ensure that international trade in wild animals and plants does not threaten their survival. Several species of animals and 28,000 species of plants are protected under CITES. Dolphins, cacti, corals, orchids and aloes are some examples.

LAND, SOIL, WATER, NATURAL



Exercises

1. Answer the following questions.

- Which are the two main climatic factors responsible for soil formation?
- Write any two reasons for land degradation today.
- Why is land considered an important resource?
- Name any two steps that government has taken to conserve plants and animals.
- Suggest three ways to conserve water.

2. Tick the correct answer.

- Which one of the following is NOT a factor of soil formation?
(a) time (b) soil texture (c) organic matter
- Which one of the following methods is most appropriate to check soil erosion on steep slopes?
(a) shelter belts (b) mulching (c) terrace cultivation
- Which one of the following is NOT in favour of the conservation of nature?
(a) switch off the bulb when not in use
(b) close the tap immediately after using
(c) dispose polypacks after shopping

3. Match the followings :

- | | |
|-----------------|--------------------------------------------------------------------------------|
| (i) Land use | (a) prevent soil erosion |
| (ii) Humus | (b) narrow zone of contact between the lithosphere, hydrosphere and atmosphere |
| (iii) Rock dams | (c) productive use of land |
| (iv) Biosphere | (d) organic matter deposited on top soil |
| | (e) contour ploughing |

4. State whether the given statement is true or false.

If true, write the reasons.

- Ganga-Brahmaputra plain of India is an overpopulated region. **T**
- Water availability per person in India is declining. **T**
- Rows of trees planted in the coastal areas to check the wind movement is called intercropping. **F**
- Human interference and changes of climate can maintain the ecosystem. **F**

5. Activity

Discuss some more reasons which are responsible for changes of land use pattern. Has your place undergone any change in the land use pattern in recent years?

1. Because it offers suitable land for agriculture.

2. Because of wastage of water, water pollution, deforestation

3. No it is called Shelter belts.

4. No, it adversely affect the ecosystem.

