

CLASS IV
SCIENCE
CHAPTER-2 ADAPTATIONS IN PLANTS

Plants grow in difficult places. They can be found in dry and sandy deserts, damp and wet pants, hilly areas, valleys, snow covered high mountain and even under water.

- The place where an organism usually lives and grows in nature is called its **habitat**. It can be small as patch and large as forest.
- **Adaptations** are the special features that help a plant to survive in its habitat.

- Plants can be divided into major groups:
 - (A) Water or aquatic plants
 - (B) Land or Terrestrial plants.

- Plants that grow in water are called **aquatic plants**. There are two types of aquatic plants — **floating plants, fixed plants** and **underwater**.

- **Floating plants:** like duckweed, pistia and water hyacinth are light and spongy. This makes plants very light. Thus plants are able to float on the surface of water. Upper surface of leaves are waxy to repel water.

- **Fixed plants:** have roots fixed to bottom of the river body such as pond. They have long stem to reach the surface of water. They have broad leaves that float on water. They also have waxy coating. They have thin, hollow, flexible and light stems which help the leaves to float. They also bend with the flow of water, thereby preventing damage by strong water current. Eg.; water lily and lotus.

- **Underwater plants:** are fixed to the bottom of the water body and remain fully underwater. Stomata are absent in leaves. It supports the life of animals to a great extent as they give out oxygen during photosynthesis. Eg.; Hydrilla and Pondweed.

Land or Terrestrial plants

- All plants that grow on land are called **terrestrial plants** or **land plants**. Plants are growing in different kinds of land areas hence plants need various adaptations.

Plants in the Plains

- Some plants grow in the plains where the climate is hot in summer and cold in winter.
- They have more area to spread.
- They have flat leaves so water to evaporate and keep tree cool.
- Examples: Mango, banyan and peepal tree.
- **Deciduous trees** that loose all their leaves in autumn in order to survive harsh weather condition and new leaves start growing as spring approaches. Eg. Maple tree and cherry.
- Evergreen trees that do not loose their leaves at once. Eg. Jack fruit and pine.

Plants in the Deserts

- Deserts are dry and very hot places. There is scarcity of rainfall and a lot of direct sunlight fall on the plants. The soil in desert are sandy and unable to hold the water. Eg. Cactus and saguaro.
- Plants store food in their stems or leaves.
- Long root system to go deep in to the ground.
- Most plants are leafless hence help in reduce water loss.
- Prickly spines discourage animals from eating plants for water.

Plants in Montains

- Plants on hills are adapted to grow in very cold temperatures.
- Most plants are tall and straight.
- Most plants are needle like leaves. That prevents loss of water and shed the snow easily.
- Waxy coating on the leaves prevent evaporation and loss of water.
- Coniferous trees that do not bear flowers but have seeds in cones.Hence are called conifers and coniferous trees. Eg Pine and fir.

Plants in heavy rainfall Areas

- Evergreen trees are found in this region.
- The broad and abundant leaves capture sunlight for photosynthesis.
- Eg. Lychee and cashew.

Plants along the sea coast

- Trees in the coastal areas are well adapted to grow in sandy soil, salty water and high rainfall.
- They have strong stem that can withstand strong winds.

- They have long roots that grow deep into the sandy soil.
- Coconut and palm trees grow well in these areas.

Plants in Marshy or Swampy Areas

- They have sticky and clayey soil. It is difficult for plants to grow in such areas as air cannot reach the roots. Thus, roots of these grow out of the soil to breathe from the air. Such roots are called **Breathing roots**. Trees growing in marshy areas are called **mangroves**. Eg. **Rhizophora and Avicennia**.

EXERCISES

OBJECTIVE TYPE QUESTIONS

A Give two examples of the following:

1. Floating plants
2. Underwater plants.
3. Plants in deserts
4. Plants in mountains
5. Plants in heavy rainfall area

B Choose the correct option.

1. Light and spongy water plants like can float on the surface of the water.
A) mangroves B) duckweed C) lotus D) cactus.
2. Coconut trees grow well in areas.
A) desert B) swampy C) coastal D) hilly.
3. is an underwater plant.
A) eelgrass B) water lily C) lotus D) duckweed
4. These trees usually have wax coating to prevent evaporation and loss of water.
A) fir B) hydrilla C) coconut D) mangrove
5. Plants in heavy rainfall areas are
A) cotton, sugar cane B) sundew, pitcher plant C) Indian pipe, fir D) mango, pine

C. Fill in the blanks.

1. Underwater plants such as pondweed and eelgrass have narrow leaves without
2. plants like duckweed and pistia have lots of empty spaces filled with air.
3. Neem, peepal and sheesham are some trees that grow in
4. Long system in desert plants go deep into ground to absorb the available water .
5. Roots of some plants that grow out of the soil to breathe from air are called roots.

D. Write T for True statements or F for False statements.

1. Some terrestrial plants grow in water.
2. The cactus plant stores water in its stem.
3. Evergreen plants do not shed their leaves at once.
4. Spines protect cactus from animals.
5. The trees in heavy rainfall areas are called conifers.

E. Match the following:

1	Floating plant	peepal
2	Plants in the plains	Eelgrass
3	Underwater plant	Teak tree
4	Deciduous trees	Coconut
5	Plant in coastal area	Wolffia

THEORETICAL QUESTIONS

A. Answer the following questions in brief.

1. What is a habitat?
2. How does long root system help desert plants?
3. Why do mountain plants have waxy coating on leaves?
4. Define coniferous trees. Give two examples.
5. What are breathing roots?

B. Answer the following questions in detail.

1. Explain some adaptation in desert plant.
2. How do plants in marshy areas survive? Explain.

C. Draw cactus plant and label its adaptations.

ANSWERS

QA

- 1- Duckweed and water hyacinth**
- 2- Pondweed and Eelgrass**
- 3- Cactus and saguaro**
- 4- Deodar and pine**
- 5- Cashew and pineapple**

QB

- 1-(b), 2- (c), 3-(a), 4-(a), 5-(a)**

QC

- 1- stomata**
- 2-floating**
- 3-plains**
- 4-root**
- 5-breathing**

QD

- 1- False, 2- True, 3-True, 4-True, 5-False**

QE

- 1-(e), 2-(c), 3-(a), 4-(b), 5(d)**

THEORITICAL QUESTIONS

QA

- 1. The place where an organism usually lives and grows in nature is called its habitat.**
- 2. Long root system to go deep in to the ground to absorb water.**
- 3. Mountain plants have waxy coating on the leaves because to prevent evaporation and loss of water.**

4. **Coniferous trees that do not bear flowers but have seeds in cones. Hence are called conifers and coniferous trees. Eg Pine and fir.**
5. **The roots of the plants that grow out of the soil to breathe from the air. Such roots are called Breathing roots.**

QB

1. **Some adaptations in desert plants are:**

- **Plants store food in their stems or leaves.**
- **Long root system to go deep in to the ground.**
- **Most plants are leafless hence help in reduce water loss.**
- **Prickly spines discourage animals from eating plants for water.**

2. **They have sticky and clayey soil. It is difficult for plants to grow in such areas as air cannot reach the roots. Thus, roots of these grow out of the soil to breathe from the air. Such roots are called Breathing roots. Trees growing in marshy areas are called mangroves. Eg. Rhizophora and Avicennia.**

QC

Cactus plant



