

Adaptations in Plants

SPECIFIC OBJECTIVES

The students learn about

- adaptation
- habitat and its types
- adaptations in plants living in different habitats
- adaptations in plants for protection

TEACHING AIDS

Picture/chart/animation showing camel in desert, polar bear on snow; Some terrestrial and aquatic plants; **Picture/chart/sample** of leaves of banyan, peepal, mango and that of hilly plants such as cedar/spruce/pine/fir; **Picture/animation** on a mangrove plant showing breathing roots, babool plant, cactus; Free-floating, fixed-floating and submerged aquatic plants; **Picture/animation** on yam, pumpkin, bamboo, pineapple/plum/rose plants

LESSON PLAN

- Teacher will start the chapter with 'Warm Up' section by asking some general questions on plants growing in different places. Teacher will also tell the name of plant, i.e., waterlily shown in the picture and help the students to fill in the blank space.
- Now, teacher will define the terms adaptation and habitat. With the help of teaching aids, teacher will define that every living being has some special features that enable it to survive in a particular surrounding (habitat) and not anywhere else.
- Teacher will define terrestrial, aquatic and aerial types of habitats (as given in chapter).
- Teacher will explain the distinguishing features of terrestrial and aquatic plants (showing pictures of some terrestrial and aquatic plants).
- Now, with the help of different teaching aids, teacher will define adaptations in plants of different habitats.
 - **Adaptations in plants growing on hills and mountains:** Teacher will explain that the plants growing on hills and mountains have short stem, needle-like leaves and cones instead of flowers.
 - **Adaptations in plants growing in plains:** Teacher will explain that the plants growing in plains have big and broad leaves so that they can lose excess of water for keeping themselves cool.

- **Adaptations in marshy plants:** Teacher will explain that marshy plants grow in waterlogged soil, therefore, their roots come out for respiration and they survive in marsh.
 - **Adaptations in desert plants:** Teacher will explain that desert plants have thick leaves with waxy coating or in some plants such as cactus, leaves change into spines. Their roots go very deep in the ground. Their stem stores water. All these features help them save water and survive in desert.
- To check the understanding of students about the topics, teacher will ask them to solve 'Checkpoint 1'.
- **Adaptations in free-floating water plants:** Teacher will explain that free-floating plants have air-filled spaces between their cells. This feature makes them light and helps in floating.
 - **Adaptations in fixed-floating water plants:** Teacher will explain that fixed-floating plants have very long roots that are rooted in waterbed. Their stems are hollow and light-weight. These features help them float on water surface while being fixed at one place.
 - **Adaptations in submerged water plants:** Teacher will explain that submerged plants grow under water, so they have long and tape-like leaves without stomata. They take carbon dioxide dissolved in water and release oxygen in water during photosynthesis.
- Now, with the help of teaching aids, teacher will explain adaptations in plants for protection.
- Poisonous sap of yam plant saves it from being eaten away by browsing animals and man.
 - Fine hair on the stem and leaves of pumpkin and bamboo plants cause itching when touched.
 - Thorns on pineapple, plum and rose plants cause injury when touched.
 - Now, teacher will ask students to solve 'Checkpoint 2'.
- At last, teacher will make students revise the new terms given under the head 'Remember These Terms' and sum up the lesson by going through the points given under the head 'At One Go'.
- Now, teacher will help students to solve the questions given under the head 'Check Your Study'.

BOOST UP

- Teacher should explain the type of habitat which the students live in and the lifestyle they have adapted. Teacher should explain the adaptations in plants found there by displaying some samples.
- Students should be encouraged to observe some adaptive features in plants around their dwelling places or wherever they go.
- Students should be encouraged to watch programmes related to plants shown on Discovery and National Geographic Channels.

EXPECTED LEARNING OUTCOMES

The students

- understand what an adaptation is.
- understand what a habitat is and what its types are.
- know about adaptations found in plants of different habitats.
- know about different adaptations in plants for protection.

EVALUATIVE QUESTIONS

The teacher may ask the following questions for evaluating learning and understanding of students.

1. What is an adaptation?
2. What is a habitat?
3. What is a terrestrial plant? Name some terrestrial plants.
4. What is an aquatic plant? Name some aquatic plants.
5. Why are conifers named so?
6. Why do plants growing in plains have broad leaves?
7. What is a marsh?
8. What are mangroves?
9. Why do leaves in cactus plant change into spines?
10. How do some aquatic plants float freely?
11. How are some floating plants fixed in water?
12. Why do animal not eat yam plant?