

Learning Objectives

After completing this lesson, students will be able to:

- know that plants too have certain autonomic movements.
- understand different types of movement in plants.
- differentiate tropic movement from nastic movement.
- gain knowledge on transpiration.
- understand that plants produce their food through the process of photosynthesis.
- understand the process of transpiration.



Introduction

Animals move in search of food, shelter and for reproduction. Do plants show such movement? Have you observed the leaves of *Mimosa pudica* (touch-me-not plant) closes on touching, whereas *Helianthus annuus* (sunflower) follows the path of the sun from dawn to dusk, (from east to west). These movements are triggered by an external stimuli. Unlike animals, plants do not move on their own from one place to another, but can move their body parts for getting sunlight, water and nutrients. They are sensitive to external factors like light, gravity, temperature etc. In this lesson, we will study about various movements in plants, photosynthesis and transpiration.

19.1 Tropism in Plants

Tropism is a unidirectional movement of a whole or part of a plant towards the direction of stimuli.

19.1.1 Types of Tropism

Based on the nature of stimuli, tropism can be classified as follows.

Phototropism: Movement of a plant part towards light. e.g. shoot of a plant.

Geotropism: Movement of a plant in response to gravity. e.g. root of a plant.

Hydrotropism: Movement of a plant or part of a plant towards water. e.g. root of a plant.

Thigmotropism: Movement of a plant part due to touch. e.g. climbing vines.

Chemotropism: Movement of a part of plant in response to chemicals. e.g. growth of a pollen tube in response to sugar present on the stigma.

Tropism is generally termed **positive** if growth is **towards the signal** and **negative** if it is **away from the signal**. Shoot of a plant moves towards the light, the roots move away. Thus the shoots are **positively phototropic**.



Figure 19.1 Positive phototropism (Negatively geotropic)