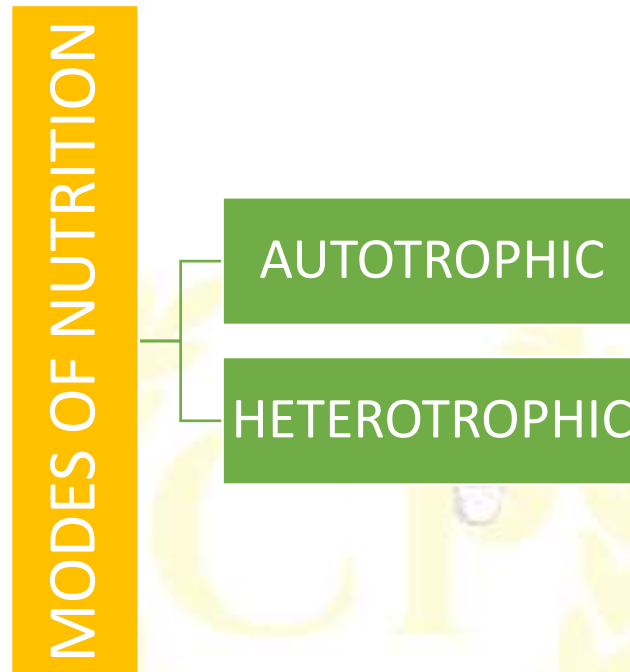


## Introduction

- The manner of taking food by an organism and its utilisation by the body is known as Nutrition.
- Carbohydrates, proteins, fats, vitamins and minerals are components of food and are called nutrients.

### 1.1: Mode of Nutrition in Plants



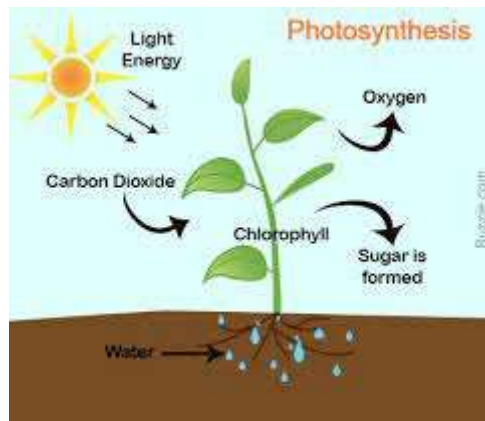
**Autotrophs or Autotrophic** – The mode of nutrition in which organisms prepare food themselves from simple substances is called Autotrophic. Therefore, plants are called Autotrophic. Plants that have chlorophyll trap the energy from the sun and prepare their own food.

**Heterotrophs or Heterotrophic-** The mode of nutrition in which organisms take in food prepared by plants is called Heterotrophic. Therefore, Animals and most other organisms that depend on plants for food are called Heterotrophs.

### Photosynthesis

Photosynthesis is the process by which green plants (containing pigment called Chlorophyll) prepare their food from simple substances like Carbon Dioxide and water in the presence of sunlight.

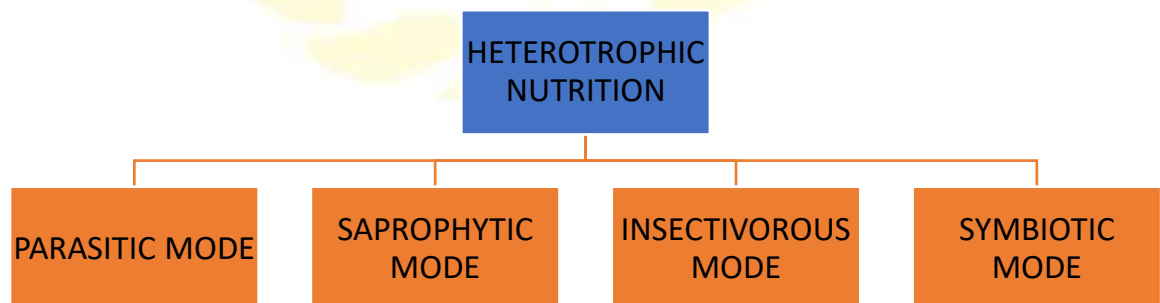
**The process of photosynthesis can be represented as:**



- The green leaves capture the energy of the sunlight.
- This energy is used to prepare food from carbon dioxide and water in the form of simple sugar called glucose.
- The green plants convert energy from sunlight to chemical energy by making carbohydrates.

### Other modes of nutrition in plants (Heterotrophic nutrition):

- The plants which do not contain Chlorophyll and are unable to prepare their food, depend on green plants or other living bodies for their nutrition.
- The mode of nutrition in which organisms cannot manufacture food and have to depend upon other plants and animals is called heterotrophic nutrition.
  - This type of nutrition is further categorised as follows:



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Let us now discuss this in detail:

#### Parasitic Mode

- In this mode plant absorbs food from another growing green plant, called the **host**.
- The dependent plant is known as **parasite**.

- Usually, Parasitic plant develop special roots which penetrate into the tissues of the host plant.
- Some examples are Cuscuta, Cassytha, hookworms, tapeworms etc.



## Saprophytic Mode

- In this mode plants obtain their nutrition from dead and decaying organic matter.
- Plants that exhibit this mode are called **saprophytes**.
- Saprophytes secrete digestive juices onto the dead and decaying matter to dissolve it and then absorb nutrients from it.
- Examples are moulds, mushrooms, yeasts and some bacteria.



## Insectivorous Mode

- In this mode plants completely depend on other insects or small animals for their nutrition.
- Insectivorous plants grow in those soils which are deficient in certain nutrients, especially nitrogen.
- These plants are green and carry out photosynthesis to obtain a part of their food.
- Examples: **pitcher plant** has a pitcher like structure which can open and close when required. When an insect lands in the pitcher it gets trapped and is digested by the digestive juices secreted in the pitcher.
- The trap of Venus Flytrap is a highly modified leaf. On the inner surface there are short stiff hairs. When any insect sits on the leaf, it shuts tightly, trapping the insect inside it.



## Symbiotic Mode

- This mode of nutrition includes close association between two different plants of different categories.
- In such type of association both the plants share food and shelter.
- For example, certain fungi live inside the roots of plants. The plant provides nutrients to the fungus and in return, the fungus provides water and certain nutrients.
- In organisms called **Lichens**, a partner containing chlorophyll, which is an alga and a fungus live together. The fungus provides shelter, water

and minerals to the alga and in return receives food prepared by the alga.

### **How Nutrients are Replenished in The Soil**

- We know that the plants absorb minerals and nutrients from the soil, as a result amount of nutrients in the soil decreases.
- Nutrients in the soil are replenished by adding fertilisers and manures. These contain nutrients like nitrogen, potassium, phosphorous etc.
- Nutrients can also be replenished by growing leguminous crop such as gram, peas, moong, beans etc.
- The roots of leguminous plants carry a bacteria called Rhizobium which fixes atmospheric nitrogen and converts it into soluble form. In return plants provide food and shelter to the bacteria.

