

BIOLOGY

CLASS NOTES FOR CBSE

Chapter 11. Our Environment

01. Introduction

The physical and biological world where we live is called our environment. The environment includes our physical surroundings like air (or atmosphere), water bodies, soil (land) and all the organisms decomposers).

Biodegradable and Non-biodegradable Wastes

All the waste materials produced by the various activities of man and animals are poisonous to some extent and can be divided into two main groups :

- (i) Biodegradable wastes, and
- (ii) Non-biodegradable wastes,

Those waste materials which can be broken down to non-poisonous substances in nature in due course of time by the action of micro-organisms like certain bacteria, are called biodegradable waste. Cattle dung and compost are common examples of biodegradable wastes. Other example of biodegradable materials are : Animal bones ; Leather ; Tea-leaves ; Wool ; paper ; Wheat ; Wood ; Hay ; Cotton ; Jute ; Grass ; Fruit and Vegetable peels ; Leaves, Flowers, and Cake, etc. The wastes materials which cannot be broken down into non-poisonous or harmless substances in nature are called non-biodegradable wastes. The examples of non-biodegradable wastes are: D.D.T. (Diphenyl Trichloroethane) ; Plastics; Polythene bags; Ball-point pen refill; Synthetic fibres; Glass objects; Metal articles like Aluminium cans; Iron nails; Silver foil and Radioactive wastes. D.D.T. is a non-biodegradable waste so it can be passed along the food chain from crops to man or other animals and birds and harm them Non-biodegradable wastes are the major pollutants of the environment. Some materials are biodegradable whereas others are non-biodegradable. It is due to the property of decomposer organisms of being specific in their action that some waste materials are biodegradable whereas other are non-biodegradable. We should use the shopping bags (or carry bags) made of paper, cotton cloth or jute because these are biodegradable materials. On the other hand, plastic bags (or polythene bags) should be avoided because plastic is a non-biodegradable material

02. Ecosystem

An ecosystem is a self-contained unit of living things (plants, animals and decomposers), and their non-living environment (soil, air and water). An ecosystem needs only the input of sunlight energy for its functioning. The examples of ecosystem are : a grassland (meadow); a forest; a desert; a mountain; a pond; a lake ; river; and sea. The desert, grassland, forest, crop-field and mountains represent *terrestrial* ecosystems (land-based ecosystems) whereas ponds, lakes, river sea and aquarium represent *aquatic* ecosystems (water-based ecosystem).



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Most of the ecosystems in the world are *natural* ecosystems but some of them are also man-made ecosystems or artificial ecosystems. The examples of artificial ecosystem are crop-fields (agricultural lands); gardens; parks and aquarium.

03. Components of an Ecosystem

All the ecosystem are made up two main components: Abiotic components, and Biotic components

- (i) **Abiotic components of an ecosystem** The abiotic components of an ecosystem (or the non-living components of an ecosystem) include the physical environment like soil, water and air alongwith the inorganic substances like carbon dioxide, nitrogen, oxygen, water, phosphorus, sulphur, sodium, potassium, pressure and humidity are also considered abiotic considered abiotic components of the ecosystem
- (ii) **Biotic Components of an ecosystem.** The biotic component of an ecosystem (or the living component of an ecosystem) is a community of organisms (like plants and animals), which is made up of many different inter-dependes populations. The biotic community (or living community) of an ecosystem include three types of organisms :
 - **Producer organisms (or Autotrophs)** which synthesize their own food. All the green plants are producers.
 - **Consumer organisms (or Heterotrophs)** which are dependent on others for food. All the animals are consumers.
 - **Decomposer organisms (or Saprotrophs)** which consume the dead remains of other organisms. Certain bacteria and fungi are decomposers.

04. The Functioning of an Ecosystem

An ecosystem involves input of energy and matter which are exchanged between living and non-living components in a cyclic process.

Producers, Consumers and Decomposers

(i) **Producers**

Producers are the organisms which can prepare their own food from simple inorganic substances like carbon dioxide and water by using sunlight energy in the presence of chlorophyll. The examples of producers are green plants and certain blue-green algae. The green plants synthesize their food during photosynthesis by taking raw materials from the earth and energy from the sun.

(ii) **Consumers**

Those organisms which consume food (eat food) prepared by producers are called consumers. consumers depend on producers for food, directly or indirectly. The consumers get their food by eating other organisms or their products All the animals are consumers. If an animal eats grass or other green plants or their products itself we say that it gets the food from producers directly. For example, a goat gets the food from producers directly when it eats grass. On the other hand, if an animal eats the meat of



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