

7. Ecosystem

Learning objectives

The learner will be able to,

- ❖ Describe the Structure, functions and types of ecosystems
- ❖ Draw ecological pyramids by means of number, biomass and energy
- ❖ Interpret carbon and phosphorus cycle
- ❖ Recognise pond ecosystem as a self- sufficient and self-regulating system
- ❖ Analyse ecosystem services and its management
- ❖ Discuss about the importance and conservation of ecosystem
- ❖ Explain the types of plant succession

Important Points and Notes

- ❖ **‘ecosystem’** the system resulting from the integration of all the living and nonliving factors of the environment.

- ❖ The amount of light available for photosynthesis of plants is called **Photosynthetically Active Radiation (PAR)** which is between the range of 400-700 nm wave length.
- ❖ **Green carbon** – carbon stored in the biosphere (by the process of photosynthesis).
- ❖ **Grey carbon** – carbon stored in fossil fuel (coal, oil and biogas deposits in the lithosphere).
- ❖ **Blue carbon** – carbon stored in the atmosphere and oceans.
- ❖ **Brown carbon** – carbon stored in industrialized forests (wood used in making commercial articles)
- ❖ **Black carbon** – carbon emitted from gas, diesel engine and coal fired power plants.
- ❖ The chemical energy or organic matter generated by autotrophs during the process of photosynthesis and chemosynthesis is called **primary productivity**.
- ❖ The amount of energy stored in the tissues of heterotrophs or consumers is called **secondary productivity**.

- ❖ The rate of net synthesis of organic matter (biomass) by a group of plants per unit area per unit time is known as **community productivity**.
- ❖ A trophic level refers to the position of an organism in the food chain. The number of trophic levels is equal to the number of steps in the food chain. The green plants (producers) occupying the first trophic level (T1) are called **producers**.
- ❖ Graphic representation of the trophic structure and function at successive trophic levels of an ecosystem is called ecological pyramids.
- ❖ **Limnology** It is the study of biological, chemical, physical and geological components of inland fresh water aquatic ecosystems (ponds, lakes, etc.).
- ❖ **Oceanography** – It is the study of biological, chemical, physical and geological components of ocean.
- ❖ Sea grasses and mangroves of Estuarine and coastal ecosystems are the most efficient in carbon sequestration. Hence, these ecosystems are called as “**Blue carbon ecosystems**”. They are not

properly utilized and maintained all over the world although they have rich bioresources potential.

- ❖ Ecosystem is damaged by disturbances from fire, flood, predation, infection, drought, etc., removing a great amount of biomass. However, ecosystem is endowed with the ability to resist the damage and recover quickly. This ability of ecosystem is called ecosystem resilience or ecosystem robustness.