Course-M.Sc.III semester

E-content-Online class dt 21/8/20 & 28/8/20

Structure of Ecosystems

Forest ecosystem

According to Hanson (1962), a forest can be defined as a stand of trees growing close together with associated plants of various kinds. In India the forest cover is about 23 percent of the total area of Indian Territory. A forest ecosystem is dominated by trees with other small size plants. Forests are natural plant communities with dominance of phanerophytes and occupy nearly 40 percent of the total land globally. Structure of an ecosystem explains composition of its abiotic and biotic components as following:-

Abiotic components are all the same like any ecosystem with environmental variations. These include inorganic and organic substances found in the soil and atmosphere. Soil and climatic factors are deciding ones in forest biotic composition. Biotic components include producers ,which is dominated by large and medium size tree. There are following types of forests in India :-

1.Tropical forests:- These are characterized by the greatest diversities of species. They occur near the equator,within the area bounded by latitudes 23.5 degrees N and 23.5 degrees S. One of the major characteristics of tropical forests is their distinct seasonality : winter is absent, and only two seasons are present (rainy and dry).

(a) Tropical moist forests – These are also called tropical rain forests. The important plants are *Terminalia, Dipterocarpus, Garcinia, Sterculia, Calamus, Shorea, Albizzia, Pothos, Vitis*, *Cinnamomum, Bauhinia*, etc.

Tropical moist deciduous forests dominantly include species of *Tectona, Terminalia, Grewi*, *Dalbergia, Lagerstroemia, Eugenia, Boswellia*, etc.
(b) Tropical dry forests :-

2. Sub tropical forests- These forestsare found in the area of high rainfall and temperature difference between winter and summer are less marked.They are found upto an altitude of 1800 metres in north and 1500 metres in the south.

(a) Wet hill forests – The important plants found in the southern state wet hill forests are species of *Eugenia,Terminalia, Murraya, Gymnosporia, Ficus, Atylosia, Pterocarpus,Lantana* etc. In the northern belt species such as *Calamus, Populus, Quercus, Betula, Garcinia, Almus, Cedrella* etc
(b) Dry evergreen forests - *Acacia modesta, Olea cuspidata*, etc.
(c) Pine forests – Species of *Pinus, Quercus, Berberis, Carissa, Bauhinia*, etc.

3. Temperate Montane forests -

(a) Wet temperate forests – *Hopea, Balanocarpus, Pterocarpus, Artocarpus, Myristica*, etc.
(b) Moist temperate forests - Berberis, Spiraea,etc.
(c) Dry temperate forests – Daphne, Indigofera, Artemesia, Desmodium, etc.

Alpine forests- These forests are found at the altitude of 2900-6000 metres. In India,alpine flora occurs in Himalayan area between 4500-6000 m. Plants growing at the altitude of 2900-6000 metres. At lower altitudes conifers and dwarf trees are found. The common plants are *Pinus, Juniperus, Abies, Betula, Rhododendron*, *Pyrus, Salix*, etc.

In India, there is great variation in climate and due to this reason composition of producer also varies. They grow in diverse habitat, eg., in tropical moist deciduous forests dominant tree species are *Tectona grandis, Butea frondosa, Shorea robusta and Lagestroemia parviflora* and in temperate coniferous forests, temperate deciduous forests species of *Quercus, Acer, Betula, Thuja, Picea,* Abies, *Pinus, Cedrus, Juniperus, Cedrus, Rhododendron*, etc. are commonly found.

Consumers :-
Primary consumers- These are herbivores which feed on tree leaves as ants, flies, beetles, leaf hoppers, bugs, spiders, etc., and larger animals grazing on shoots and/herbs or fruits of producers as elephants, deer, moles, squirrels, shrews, flying foxes, mongoose etc.

Secondary consumers- These are carnivores and feed on primary consumers, eg. Snakes, birds, lizards, fox etc.

Tertiary consumers- These are top consumers,eg., lion tiger, etc. They eat upon carnivores of secondary consumers level.

Decomposers-

These are wide variety of microorganisms like fungi namely Aspergillus, Polyporus, Alternaria, Fusarium, Trichoderma, etc., bacteria, such as Bacillus, Pseudomonas, Clostridium etc. Actinomycetes (Streptomyces) are also important among decomposers.

Topic contd. -