



FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

ENT-121: Fundamentals of Entomology

Unit-II

Lecture 21: Ecology and Insect Ecology:

The word ecology is the modified form of oekologie derived from greek word oikos, meaning home, and logos meaning discourse/study introduced by Reiter in 1868, and later anglicized to ecology.

- **Haeckel (1869)** defined Animal Ecology-as the body of knowledge concerning the economy of nature-the investigations of total relations of animals to their inorganic and organic environment.
- **Elton (1927)** defined animal ecology-scientific natural history, concerned with sociology and economics of animals. His concept of key-industry animals (hervivores) integrating the community through food chains, focused attention on the interactions among various animals.
- The concept of communities (plants and animals) led to more précised definition by Shelford (1929) who defined ecology as the science of communities.
- **Odum (1953)** defined ecology as the study of the structure and functions of nature.

Individuals: We can consider how individuals are affected by the environment; this can determine whether they can survive (which will affect their distribution) and how well they reproduce (which will affect their abundance.)

Populations: A population is a group of organisms of the same species within a defined area. We can look at the factors that determine how large a population grows, that regulate it at a certain size, or that cause population size to fluctuate.

Communities: A community usually refers to all the organisms within an area. We can also talk about a community of some type of organism, such as the community of rodents in a paddy field

Ecosystems: An ecosystem refers to all the organisms within an area and the abiotic factors that affect it. Ecosystem or ecological system is the functioning together of community and the non-living environment where continuous exchange of matter and energy takes place. In other words, ecosystem is the assemblage of elements, communities and physical environment. Habitat is the place where the organisms live.

Biosphere is the term used for all of the earth's ecosystems functioning together on the global scale.

Agroecosystem is largely created and maintained to satisfy human wants or needs. It is not a natural ecosystem but is manmade. Agroecosystem is the basic unit of pest management - a branch of applied ecology.

1. Biotic factors - includes

- a) Competition (interspecific and intraspecific)
- b) Natural enemies (predators, parasites and pathogens)

2. Abiotic factors –

- a) Temperature
- b) Light
- c) Moisture and water
- d) Substratum and medium
- e) Wind
- f) Rainfall etc.