



RAMA
UNIVERSITY

www.ramauniversity.ac.in

FACULTY OF ENGINEERING AND
TECHNOLOGY

Lecture- 14

Ecosystems-Part 2



**Dr. Swati Sachdev,
Assistant Professor,
Dept. of Applied Sciences and Humanities**

Subject : Environmental Studies and Disaster Management

Course: B.Sc. Ag. (1st year)

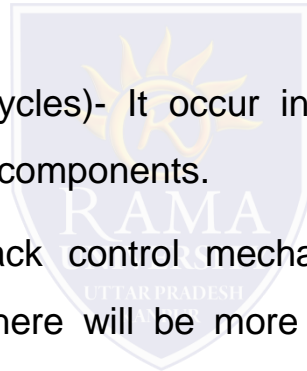
Subject Code: PPY-211

Semester: IInd sem.

Function of Ecosystem

The major functions of ecosystems are:

- 1) Energy flow through the food chain- Energy flow occurs in non-cyclic manner and is uni-directional. Plants capture solar energy and convert it into chemical energy through the process called photosynthesis.
- 2) Mineral cycling (Biogeochemical cycles)- It occurs in cyclic manner and maintains cycling of nutrients between biotic and abiotic components.
- 3) Maintain homeostasis and feedback control mechanism. For e.g., if the prey population increases in an ecosystem then there will be more food for predators, hence the population of predators will also increase.



Energy flow in the Ecosystem

Energy flow is the transfer of energy through living things within an ecosystem via food chain.

Energy flow in an ecosystem is always linear and uni-directional.

Flow of energy follows the ecological rule of 10% i.e., 10% of energy is transferred at each trophic level.

There are two energy flow models: 1) Single channel model and 2) Y-shaped model.

Single channel model: The flow of energy in an ecosystem takes place through the food chain in a linear fashion.

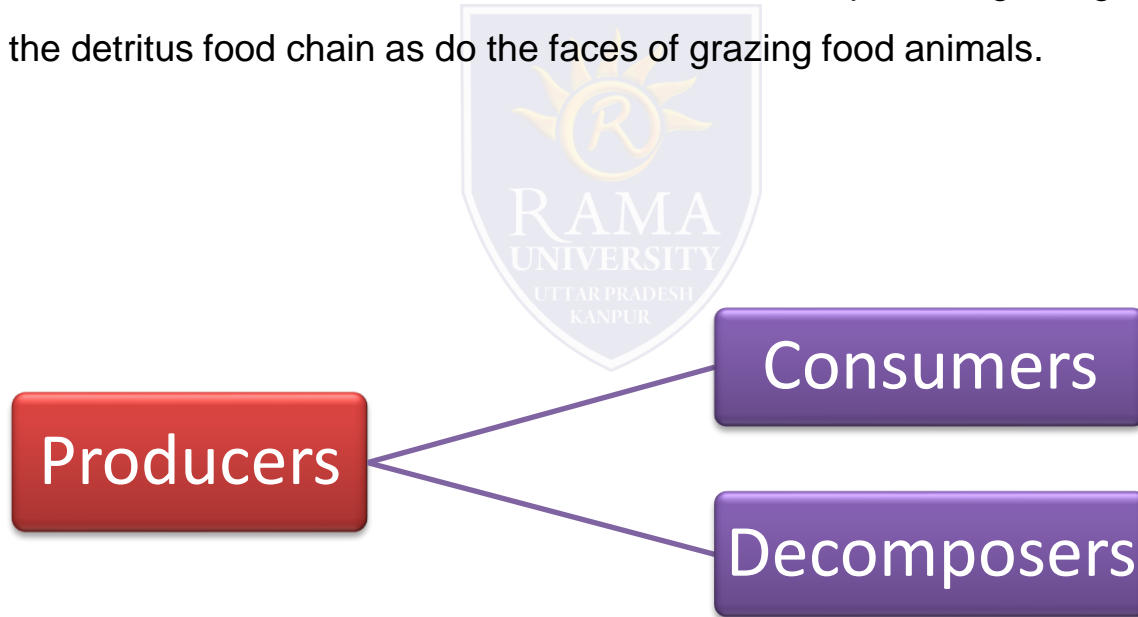


Single channel energy flow

Y-shaped model: The Y-Shaped or double channel energy flow model include simultaneous working of grazing and detritus food chains in an ecosystem.

In nature, both grazing and detritus food chains are interconnected in the same ecosystem.

For example, dead bodies of small animals that were once part of grazing food chain become incorporated in the detritus food chain as do the feces of grazing food animals.



Y-shaped energy flow model

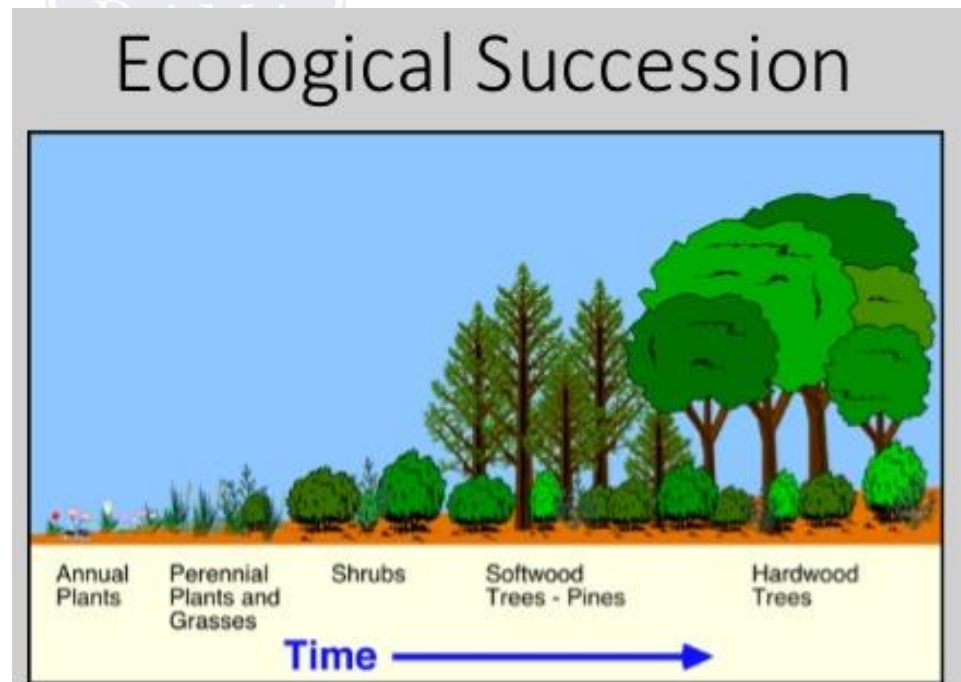
Ecological succession

A characteristic feature of biological communities is that their structure and composition changes according to certain changes in environmental conditions.

Some of these changes occur in an orderly fashion.

The phenomenon or process through which these changes occur in ecological communities over time is called **Ecological succession**.

When the changes create a community that is almost in equilibrium with the environment, it is known as **climax community**.



Steps involved in ecological succession

- 1. Nudation:** Succession begins with the development of a bare site, called Nudation (disturbance).
- 2. Invasion:** It includes three steps.
 - 1. Migration (Dispersal):* It refers to arrival of propagules.
 - 2. Ecesis (Establishment):* It involves establishment and initial growth of vegetation.
 - 3. Aggregation:* Increase in numbers of individuals in community
- 3. Competition:** As vegetation becomes well established, grow, and spread, various species begin to compete for space, light and nutrients.
- 4. Reaction:** During this phase autogenic changes such as the build-up of humus affect the habitat, and one plant community replaces another.
- 5. Stabilization or climax stage:** A supposedly stable climax community forms.

