

Functional Attributes —

The main source of energy for every ecosystem → Sun

These are —

- (i) Food chain, food web & trophic structure
- (ii) Energy flow
- (iii) Cycling of nutrients (Biogeochemical cycle)
- (iv) Primary & Secondary production
- (v) Ecosystem development & regulation

Energy flow -

- Energy - basic force responsible for all metabolic activities.
- Flow of energy \rightarrow from producers to top consumers is called energy flow - unidirectional.
- Trophic level interaction \rightarrow deals with how the members of an ecosystem are connected based on nutritional needs.

• Trophic levels - (Trophe = nourishment)

Autotrophs

Heterotrophs

(i) - Green plants
(producers)

(ii) - Herbivores (primary consumers)

(iii) - Carnivores (secondary consumers)

(iv) - Carnivores (tertiary consumers)

(v) - Top carnivores (Quaternary consumers)

\Rightarrow Loss of energy takes place in the form of unstable heat at each trophic level.

\Rightarrow Energy level decreases from the first trophic levels upward.

Trophic Structure -

The arrangement of producers & consumers in an ecosystem in a definite manner & their interaction along with population size.

* Food chain - The sequence of eating & being eaten in an ecosystem.

e.g. Grassland ecosystem -

Grass → grasshopper → Frog → Snake → Hawk

Pond ecosystem -

Phytoplanktons → water fleas → small fish → Tuna

Arctic tundra -

Lichens → reindeer → Man

* Types of food chain -

① Grazing food chain - starts with green plants & culminates in carnivores.

e.g; ① Grass → Rabbit → Fox

(ii) Phytoplanktons → Zooplanktons → Small fish → Carnivorous fish

② Detritus food chain - starts with dead organic matter

↓
Consumed by detritivores & decomposers

Partially decomposed
dead organic matter
+
decomposers

consumed by → Detritivores, Detritivores & their predators

