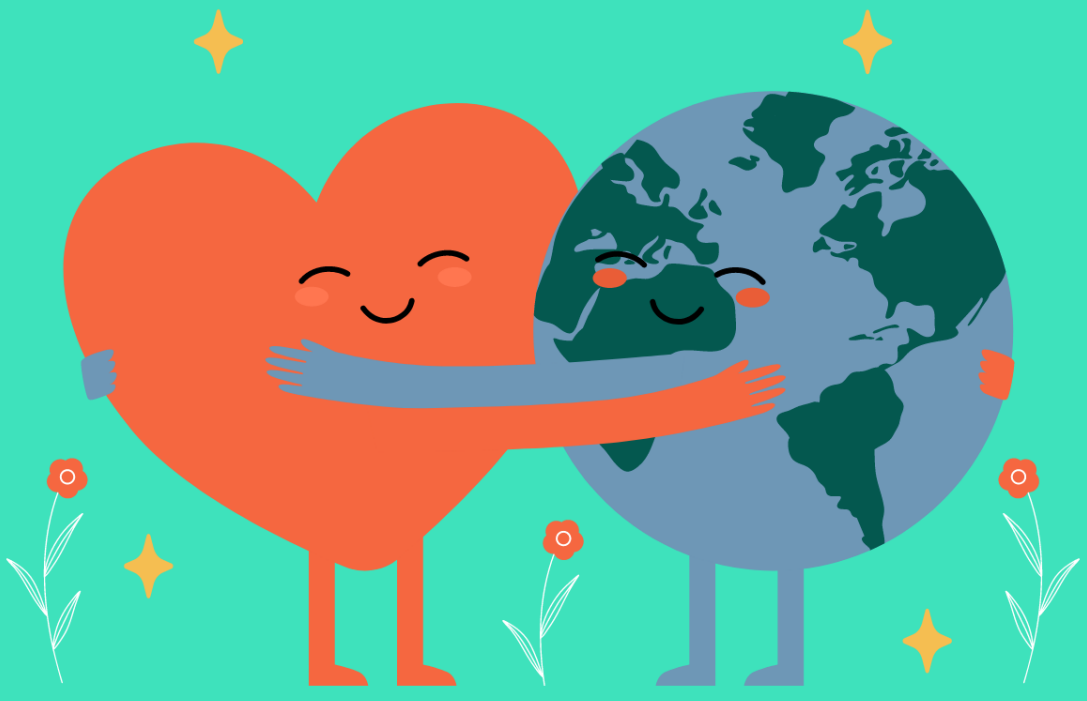
MBC- MRIDUL BHAIYA CLASSES

OUR ENVIORONMENT

CLASS 10 NOTES
BY MRIDUL BHAIYA



MBC – Mridul Bhaiya Classes

CLASS X

BIOLOGY NOTES

OUR ENVIRONMENT

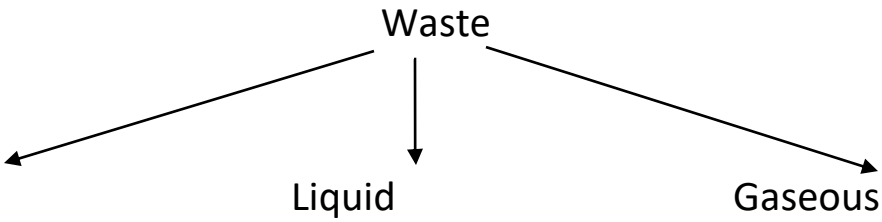
- ✓ Detailed notes
- ✓ PYQs with answers
- ✓ Graphics included

OUR ENVIRONMENT

Environment – It refers to the complete range of physical and biological condition in which organism like and interact with biotic and abiotic factors

Habitat – The place where an organism live is called its Habitat.

Wastes – The useless; left over on discarded substances are called waste



In form of household wastes, farm wastes etc.

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These substances are divided into two main groups –

1. Biodegradable Substances/ Wastes (Organic) : Substance which can be dicomposed by action of action of micro-organisms are called biodegradable wastes.
   Eg- Fruits and vegetable peels, cotton etc
2. Non - Biodegradable Wastes : Substances which cannot be decomposed by action of micro-organisms are called non-biodegradable wastes.
   Eg- Plastic, metals etc

Ways in which biodegrable wastes would affect the enviornment –

(i.) Decomposition of biodegrable wastes leads to foul smell.

(ii.) Dumping of industrial wastes at large amount reduces fertility or soil and leads to reduction in crop yields.

(iii.) Dumping of waste into water bodies to water pollution and responsible for spreading water borne diseases

Ways in which Non-biodegradable wastes would affect the environment

(i.) They block the transfer of energy and minerals in the ecosystem.

(ii.) They make the environment poissnous and unfit for survival.

(iii.) They also pollute water and harms aquatic life.

DDT (Dichloro Diphenyl Trichoroethane) – it cannot be broken down into simpler, harmless substance and harm the environment.

Q. Besides natural degradation by microbes, what are the other ways to dispose of bio degradable?

A. the other ways to dispose of biodegradable waste is through waste treatment plants or converting them into manure and form bio-gas

Q. Mention three environment-friendly practices

A. i. Carrying cloth bags instead of plastic bags for shopping.
ii. Switching off unecessary lights and fans
iii. Limited use of petrol/diesel.

ECOSYSTEM : It was coined by A.G tansely (1935). It refers to all the interacting organism in an area together with the non-living constituents (abiotic) of the environment to form an ecosystem.

Eg- forest,pond etc.

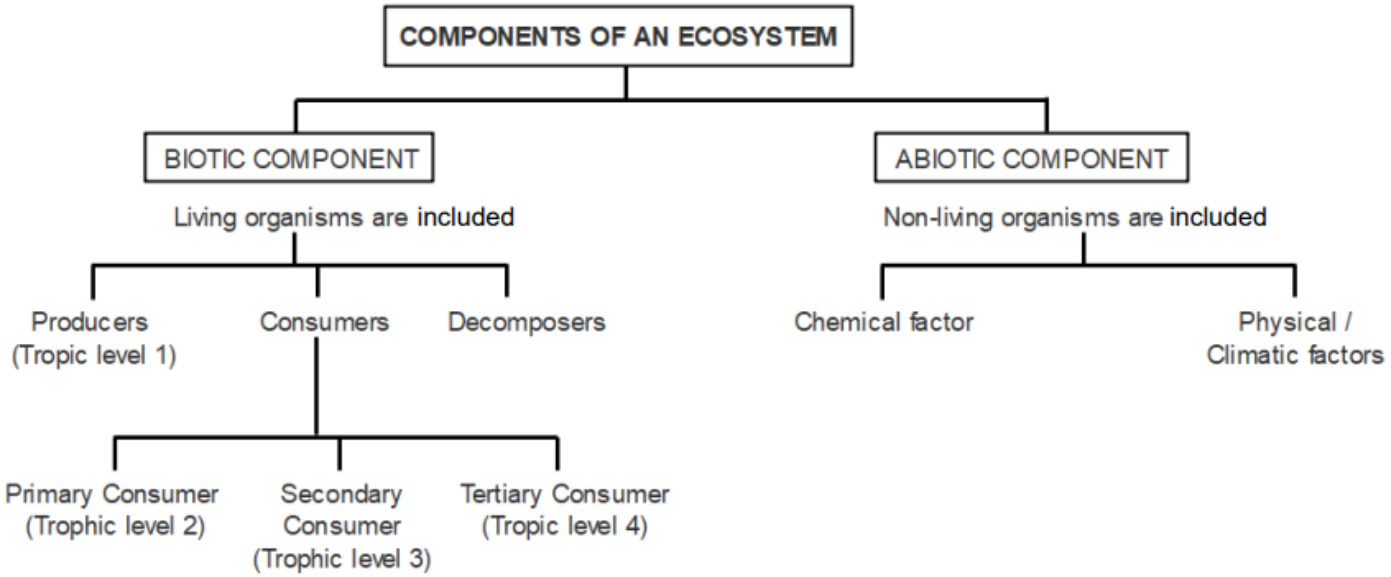
It is the structural and functional unit of biosphere.

Types :-

I. Natural ecosystem : The ecosystem which exist in nature on its own. Eg:- Forest, lake, ocean depending upon the habitats, it may be
   (a) Terestrial (desert, grassland, forest)
   (b) Aquatic (ponds, lakes)

II. Artificial Ecosystem : The ecosystem which is created and maintained by humans are called artificial or man-made ecosystem
   Eg : aquarium, garden

It is of two types	
Natural Ecosystem ❖ It is governed by natural conditions ❖ Terrestrial Natural Ecosystem : eg. Forest, grassland and desert. ❖ Aquatic Natural Ecosystem : eg. Freshwater (Pond, Pool, River, stream and Marine water Ocean and sea.)	Artificial Ecosystem ❖ It is governed by man. ❖ Also known as man made ecosystem. ❖ Eg. Cropland ecosystem and aquarium.



(A) Abiotic Components : All the non-living components such as air, water, land, CO_2 ,O_2 , light etc form abiotic. These component are physical factors such as light, temperature, water etc.

Physical factors or abiotic factors affecting Ecosystem :-

i. Light – light energy (sunlight) is the primary source of energy in all ecosystems. It is energy which is commonly used by green plants contain chrolophyll during process of photosynthesis

ii. Temperature – The distribution of plants and animals is greatly influenced by extreme temperatures

For eg :- during warm season temperature warms the water bodies & water evaporates causing rain later which affects the growth of plants which determines variety animals living that place.

iii. Atmospheric Gases – The most important gases are CO_2 , O_2, nitrogen. Oxygen is used by all living organisms during respiration, CO_2 is used by green plants for photosynthesis and nitrogen is made available to plants by certain bacteria.

iv. Water – water is essential for life and all organisms depend on it to survive in especially desert areas.

(B) Biotic Components : All the living components such as plants, animals, bacteria, etc form the biotic components.

On basis of nutrition, types are:-

i. Producers – These organisms who can produce their own food using abiotic component.

❖ All green Plants that can prepare their own food and are called Producers.

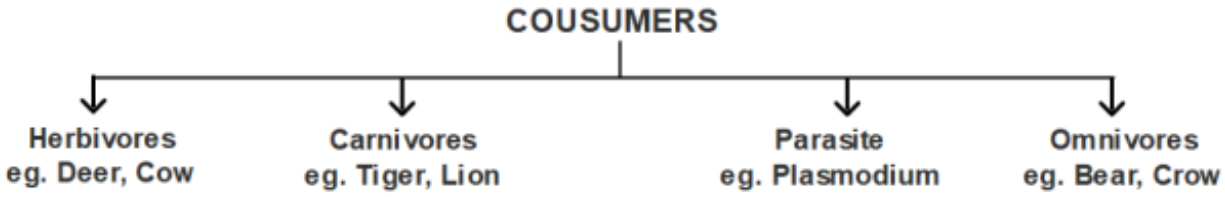
❖ Also called as Autotrophs.

Ex : All green plants, blue-green algae etc

→ These are sources of nutrition for rest of ecosystem.

→ Indirectly by these are also source of O_2 and pick up CO_2, so they balance the composition of air.

ii. Consumers – These are organisms who are dependent on producers directly or indirectly for their food.
Ex – all animals, including human



Herbivores – These are animal which directly feed on plants. They are called primary or first order consumers. Ex : dear, goat etc

→ Since then convert plant matter → animal matter they are known as key industry animals.

Carnivores – These are animals which prey upon their animals and feed on their flesh. They are called second order consumers.

→ Some carnivores may be predator which kill their prey and feed. These are called third order consumers

Omnivores – Those who feed upon both plants and animals.

Ex – Human

Parasites – Those who live in body of host and take food from it without killing them. Eg - plasmodium, cascuta etc

Decomposers - These are known as organisms of decay microorganisms as these are which feed on decaying and dead living matter. They breakdown the remains of dead plants and animals releasing substances that can used by other members or ecosystem . eg - bacteria, fungi etc

It plays following role in the environment :

→ They help in recycling of material ,replenishment of soils nutrients.
→ They also clean up surroundings by decomposing org - & organic waste.

Food Chain - It is a series of organisms through which energy is transferred in form of food .
eg Grass → Deer → Lion

Trophic level - In a food chain various steps where transfer of energy of energy and takes place is called tropic level .
Levels - first topic level → Producers (autotrophs)
second tropic level → Herbivores or primary consumers.
Third level → Carnivores or secondary consumers.
Fourth level → large or tertiary level consumers.

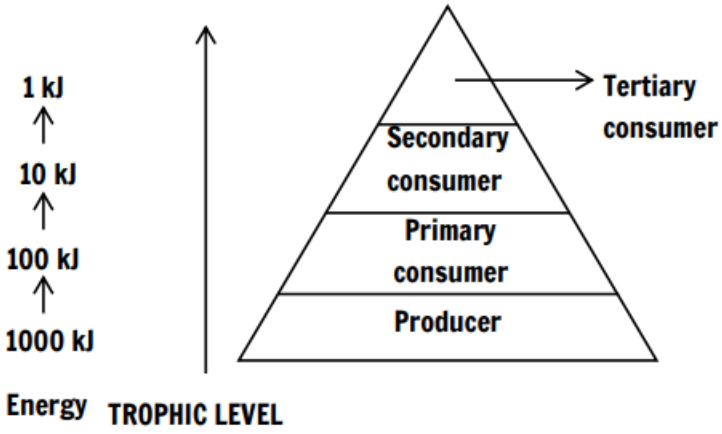
Energy flow b/w trophic levels or food chain

1. Flow of energy in a food chain is unidirectional .
2. Green plants capture 1% of sunlight and convert it into food energy.

10% law - According to 10% law, only 10% of energy entering a particular trophic level of organism is available for transfer to next trophic level (higher). The remaining 90% of energy is used in life processes (digestion, respiration) by present trophic level .

Grass $\xrightarrow{10KJ}$ Dear $\xrightarrow{1KJ}$ Lion

3. Due to this gradual decrease in energy , food chain contain only 3-4 trophic levels.



Q. why are crop fields known as artificial ecosystem ?

Ans:

i.) Crop fields are man-made , they do not grow naturally rather it is grown by human according to seasons ,type of soil etc.

ii.) These are not wild life area which is left to care of nature rather it is managed , soil is prepared for sowing seeds, irrigation etc for getting good yield .

That's why it is known as artificial ecosystem.

Q. " Energy flow in a food chain is unidirectional . " Justify .

Ans: Flow of energy in ecosystem is always unidirectional . This is because the energy that captured by autotrophs cannot revert back to

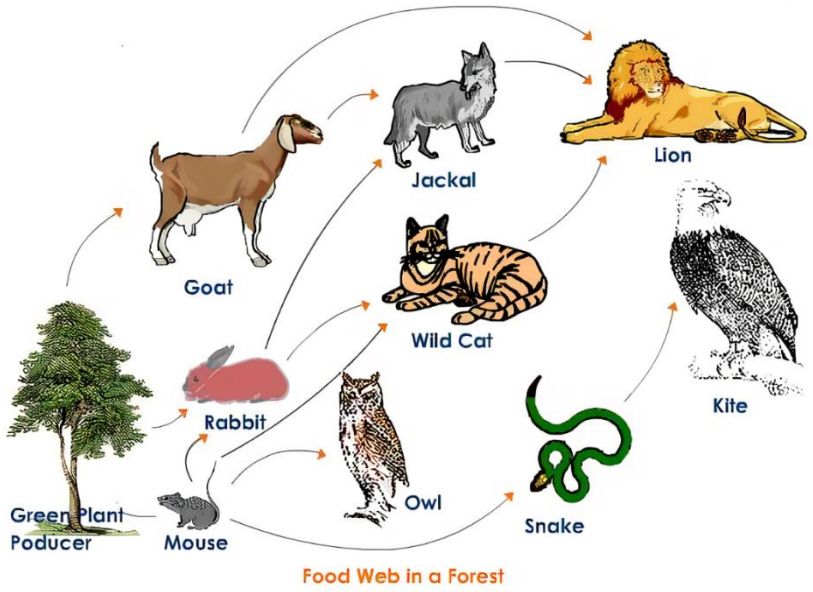
solar Input and energy which passes to herbivores cannot come back to autotrophs. The energy moves progressively through various levels.

Ecological Pyramids

Types –

1. Pyramids of no. – Represent total no. of organisms in each trophic level. Always upright but in tree ecosystem it is inverted.
2. Pyramids of Biomers – Represents total weight of organisms in each trophic levels. It may be
   i. Upright Eg- In grasslands
   ii. Inverted Eg- In pond Ecosystem
3. Pyramids of energy- Represent total energy of organisms at each trophic level.
   Always upright

Food Web – it is network or interrelation of different food chain present in ecosystem



Food Web in a Forest

Food chain in Desert : Cactus → Scorpion → Rat → Snake

Significance of food chain :
i) It shows the interdependence between organisms .
ii) It helps to understand movement of toxic substance.
iii) It shows who eats whom.
iv) It shows how ecological balance goes on.

Biological magnification or Biomagnification – It is the phenomenon that refers to increasing or concentration of harmful chemicals with each successive trophic level .

Ozone - Ozone (Os) is a molecule formed by three atoms of oxygen. It is deadly poisonous .

Formation in Atmosphere : The high energy UV radiation coming from sun splits oxygen into 2 free oxygen atoms .

$O_2 \xrightarrow{UV} O + O$

The free oxygen atoms produced is very reactive . These oxygen atoms react with oxygen molecule to form ozone molecule

$O_2 + O \longrightarrow O_3$

⇒ Function of Ozone layer :
The layer of atmosphere in which most of atmosphere's ozone is concentrated is called ozone layer. It absorbs most of harmful radiations (UV) coming from sun which can cause skin cancer, cataract, disturb global rainfall etc

⇒ Depletion of Ozone layer :

It is mainly depleted due to synthetic chemicals called chlorofluorocarbon (CFCs) used in refrigerators.

As : CFCs are very stable. Being stable they do not degrade easily and rise up in atmosphere . In atmosphere, UV radiation breaks CFCs molecules in release of chlorine which on reaction with ozone breaks it into Oxygen molecules.

Harmful effects of ozone → i.) In atmosphere, it is highly toxic causing eye irritation etc.

ii) It harms plants by destroying photosynthetic cells.

GARBAGE: The household waste is called garbage.

→ The disposal of waste generated by us in such a manner that it doesn't affect our environment adversely is called garbage management.

Methods of Garbage disposal :-

1. Recycling - It is process of converting waste materials to new products. Materials like tin, cans etc are recyclable .
2. Composting - Biodegradable domestic wastes such as left over food, peels of fruits and vegetables are buried in a pit dug into ground. They are converted into compost and used as manure.
3. Landfills - solid waste is dumped into a low - lying area and covered with soil .
4. Sewage treatment - sewage is carried to sewage treatment plants (STPs)

This Chapter Ends here !! But not your work

Go to Practice Questions, Solve Dpps attend MCQs and revise the notes after some 2nd 4th and 7th day

To get 95+ you have to keep on revising what you studied.

[Remember Consistency and HardWork Gives Great Result]

NOTES MADE BY

MRIDUL BHAIYA