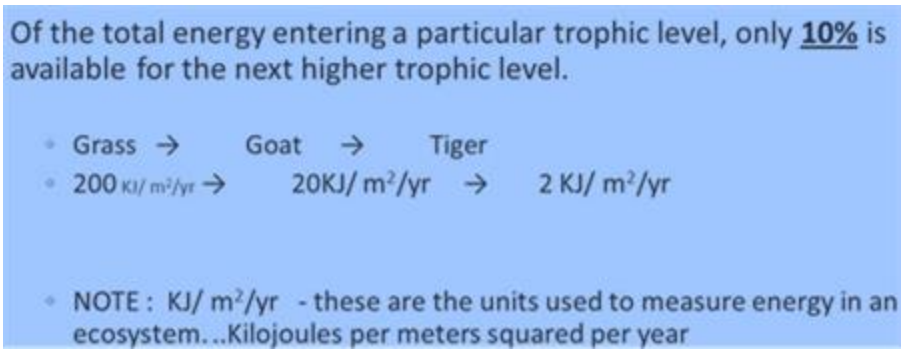
Our Environment

Improve your learning

Q. 1. What happens to the amount of energy transferred from one step to the next in a food chain? (AS1)

Answer : i. When there is a transfer of energy from one tropic level to another, only 10 % of energy gets transferred to the next trophic level.

ii. For example, when grass (producer) is eaten by a goat, only 10% of the total energy available to the grass is transferred to goat.



Q. 2. What do pyramids and food chain indicate in an ecosystem? (AS1)

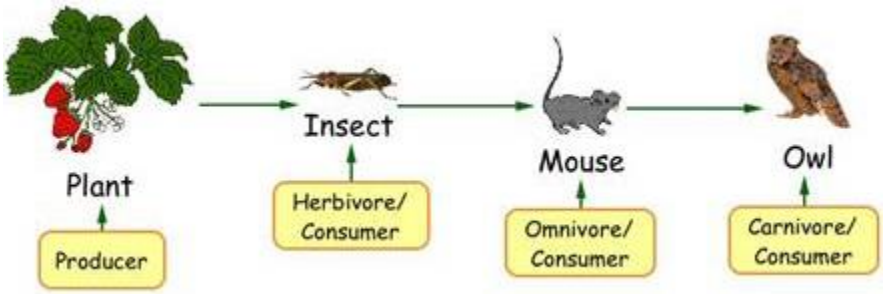
Answer : i. The food chain in an ecosystem indicates food relationships among living organisms.

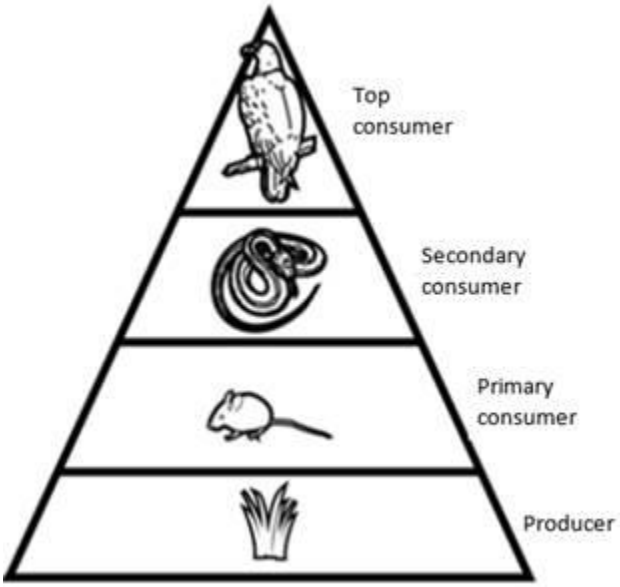
ii. The food chain is represented by arrows between the food and the consumer.

iii. Food chain also indicates the flow of energy from one organism to another.

iv. The pyramid is the graphical representations of organisms at different trophic levels.

v. In the ecological pyramid, the producers occupy the base of the base (I tropic level) of the pyramid and the other successive tropic levels (primary, secondary and top consumers) are represented one above the other with top carnivores at the tip.





Q. 3. Write a short note on the pyramid of number for any food chain? What can we conclude from this pyramid of numbers? (AS1)

A. tree B. Insect C. Woodpecker

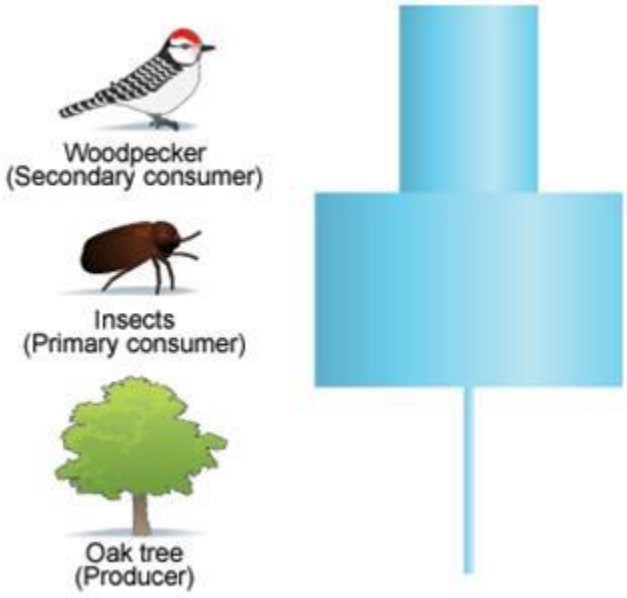
Answer : i. The graphical representation of the number of organisms at each trophic level in a pyramid is called pyramid of numbers.

ii. In a pyramid, when we move from the primary consumers to top consumer (large carnivores), the size increases but a number of animals decreases.

iii. For example in a forest, the aphids are very small in size and occur in huge numbers, the lady birds which feed on them are distinctly larger and not so are numerous.

iv. The insectivorous birds like crows which feed on the lady birds and are only presented in small numbers.

Sometimes, the pyramid of numbers does not look like a pyramid. In this question, the producer is a large tree and the primary consumer is small insects and very large in number and secondary consumer is bird woodpecker. Although the consumers are very small as compared to tree. Whatever may be the case, the producers still goes at the bottom of the pyramid.

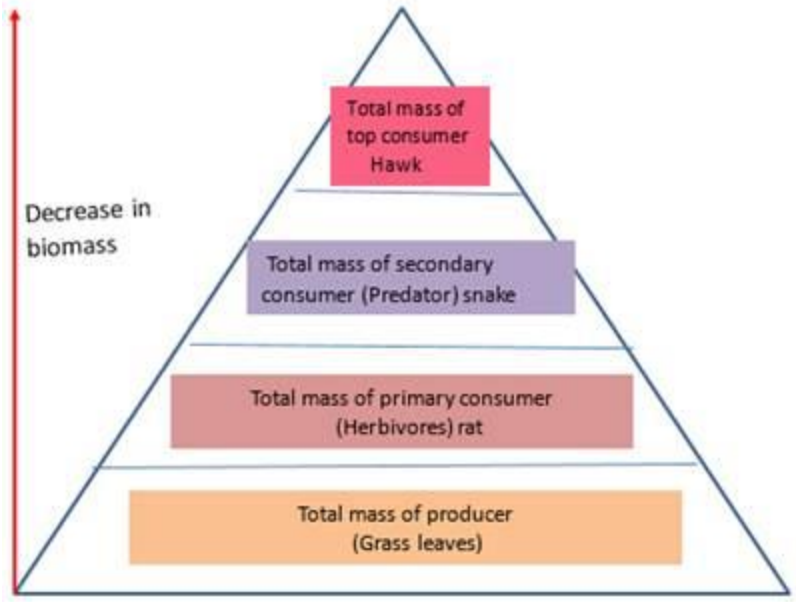


Q. 4. What is biomass? Draw a pyramid of biomass for the given food chain (AS1)

A. grass leaves B. Herbivores C. Predators D. Hawk

Answer : i. The mass of **living material** of the total number of organisms in at a particular trophic level.

ii. The biomass in each trophic level is always less than the trophic level below because biomass is a measure of the amount of food available.



Q. 5. How is using of toxic material affecting the ecosystem? Write a short note on bioaccumulation and biomagnifications. (AS1)

Answer : i. Using of pesticides (toxic chemicals) that kill pests, weedicides (toxic chemicals) that kill weeds used in the agriculture, lead to the destruction of many other species along with pets in the ecosystem.

ii. Some of these may be predators which naturally feed on these pests, some other may be the food of other animals.

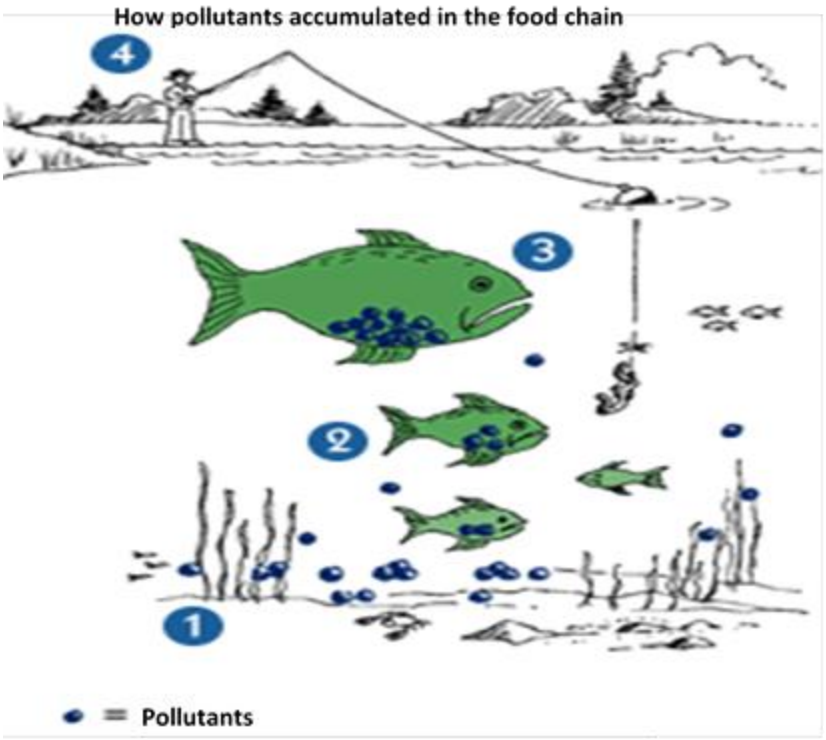
iii. These may lead to unpredictable changes in food chains and upset the balance within the ecosystem.

i. Bioaccumulation refers to how pollutants enter a food chain.

ii. It is a process of increase in the concentration of a pollutant from the environment to the first organism in a food chain.

iii. Biomagnification is the tendency of pollutants to concentrate as they move from one tropic level to the next is known as biomagnification.

iv. Since human beings occupy the top level in any food chain, so the maximum amount of toxic pesticides get accumulated into the human bodies.



Q. 6. Should we use pesticides as they prevent our crop and food from pests or should we think of alternatives? Write your view about this issue and give a sound reason for your answer. (AS1)

Answer : i. The pesticides are non-biodegradable chemicals. These chemicals cannot decompose by decomposers (bacteria and fungi).

ii. They get accumulated in the environment and cause harmful effects to the living organisms. Therefore, we should think about using alternatives to pesticides.

iii. The alternatives of pesticides which can be used in the agriculture are: crop rotation (alternate growing of two different crops in the same field), biological control of pets for example control of mice by owl, vermicomposting (use of earthworm), using bio-fertilizers and development of genetic resistant strains, for example Bt cotton.

Q. 7. What is a trophic level? What does it represent in an ecological pyramid? (AS1)

Answer : i. The group of organisms that occupy the same level in a *food chain is* called a trophic level.

ii. For example, in a grassland ecosystem, the different species of grasses are primary producers make up one trophic level.

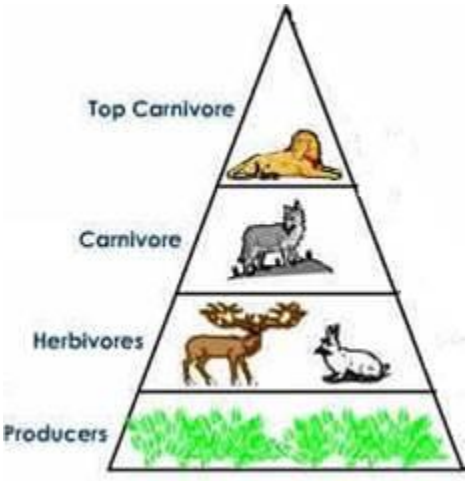
iii. Similarly different species of grass eating animals (herbivores) are at one trophic level.

a) In ecological pyramid primary producers (green plants) make up the first trophic level.

b) The second trophic level consists of *herbivores (plant eating organisms) these*organisms get energy by eating primary producers and are called *primary consumers*.

c) Trophic level three consists of carnivores and omnivores which eat herbivores; these are the *secondary consumers*.

d) Trophic level four contains carnivores and omnivores which eat secondary consumers and are known as *tertiary consumers.*



Q. 8. If you want to know more about the flow of energy in an ecosystem, what questions do you ask? (AS2)

Answer : i. What is 10% Law?

ii. What happens to the major percentage of energy during energy transfer between trophic levels?

iii. What is the difference between Gross ecological efficiency and Net ecological efficiency?

iv. Why the flow of energy in a food chain is unidirectional?

v. How does a food chain represent the flow of energy?

Q. 9. What will happen if we remove predators from food web? (AS2)

Answer : i. Removing organisms at any level from a food chain, the delicate ecological balance will be disturbed.

ii. If we remove predators from a food web, then there will be no population control of herbivores by predator

iii. As a result, the population of the herbivores will increase drastically.

iv. Increase in herbivores population leads to excessive grazing of producers (grasses).

v. By over grazing grassland may turn into desert.

Q. 10. Observe a plant in your kitchen garden, and write a note on the producer-consumer relationship. (AS3)

Answer : i. To study the producer-consumer relationship, I have selected tomato plant in my kitchen garden.

ii. The tomato plant makes its own food through photosynthesis. Small insects feed on leaves and other parts of a tomato plant.

iii. Birds such as sparrows feed on small insects and earthworms present in the soil.

iv. Crows and Hawks often kill and eat birds. These may be considered as tertiary consumers.

v. All these animals together maintain their lives in a stable ecosystem.

Q. 11. What type of information do you require to explain pyramid of biomass? (AS4)

Answer : i. A pyramid of biomass is a more accurate representation of the flow of energy through a food chain.

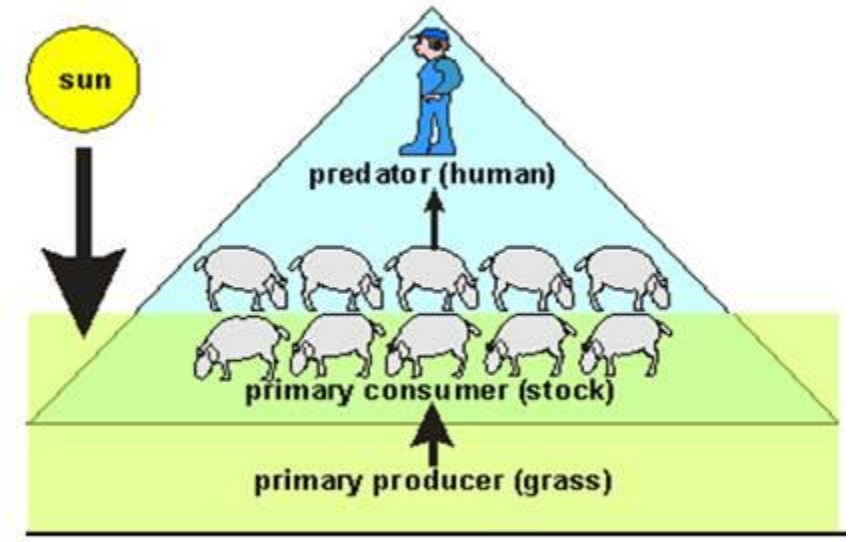
ii. But the seasonal variations may result in higher or lower values for the amount of biomass sampled at a particular time than the average amount over the whole year.

iii. The mass of plant matter which is consumed by the herbivores is also necessary. In a similar way, the mass that is produced by the primary consumes by consuming plant matter, the total mass of the secondary consumes that could be supported by the primary consumers and so on through the chain.

iv. This information is also necessary to explain pyramid of biomass.

Q. 12. Draw a pyramid of numbers considering yourself as a tip level consumer. (AS5)

Answer :



Pyramid of number in which human is top consumer

Q. 13. Prepare slogans to promote awareness in your classmates about ecofriendly activities. (AS7)

Answer : i. Greener Earth – Cleaner Air

ii. Save energy- Save Lives

iii. Yes to friend Insects – No to toxic Pesticides

iv. Save paper – Save trees

v. Save water- Save life

Q. 14. Suggest any three programs for prevention of soil pollution in view of voiding pesticides. (AS7)

Answer : i. Crop rotation should be encourage among farmers.

ii. 'Mixed Crops' and 'aakarshaka patralu' are very useful in preventing pests in a natural way.

iii. *Bacillus Turingenesis*, Trichoderma bacterium can be used prevent attacks of pest.

iv. Use of genetically resistant strains of varieties instead using pesticides.

Choose the correct Answer

Q. 1. What does food chain always start with- ( )

A. The herbivore
B. The carnivore
C. The producer
D. none of them

Answer : The producers are the organisms which make food using sunlight. On producers other organisms depend on them. That is why food chain always start with producers.

Q. 2. Which of the following do plants not compete for? ( )|

A. Water
B. Food
C. Space
D. all above

Answer : All the green plants make their own food using carbon dioxide and sunlight.

Q. 3. Ban all pesticides, this means that ( )

A. Control on usage of pesticides
B. Prevention of pesticides
C. Promote ecofriendly agricultural practices
D. Stop bio chemical factories

Answer : No use of pesticides is allowed in the crop field.

Q. 4. According to Charles Elton ( )

A. Carnivores at the top of the pyramid
B. Energy trapping is high at the top of the pyramid
C. No producers at the top of the pyramid
D. A and C

Answer : In any ecological pyramid, producer occupies the base of the pyramid and carnivores are at the top of the pyramid.