

Food Web & Agriculture (Class 5)

We all love eating Pizza. But do we just eat it for taste?

NO- We eat because it also gives us energy to do diff activities like playing, reading, sleeping, talking etc.

- Similarly every organism on the earth, be it small animals, squirrels, ants, fishes, flowers or trees need energy to live.

-So where does this energy come from and how does it gets passed from one organism to another??

-It passes from one organism to another either by eating plants or by eating one another.

-This movement of energy from one living thing to another living thing is called Food Chain or Food Web.

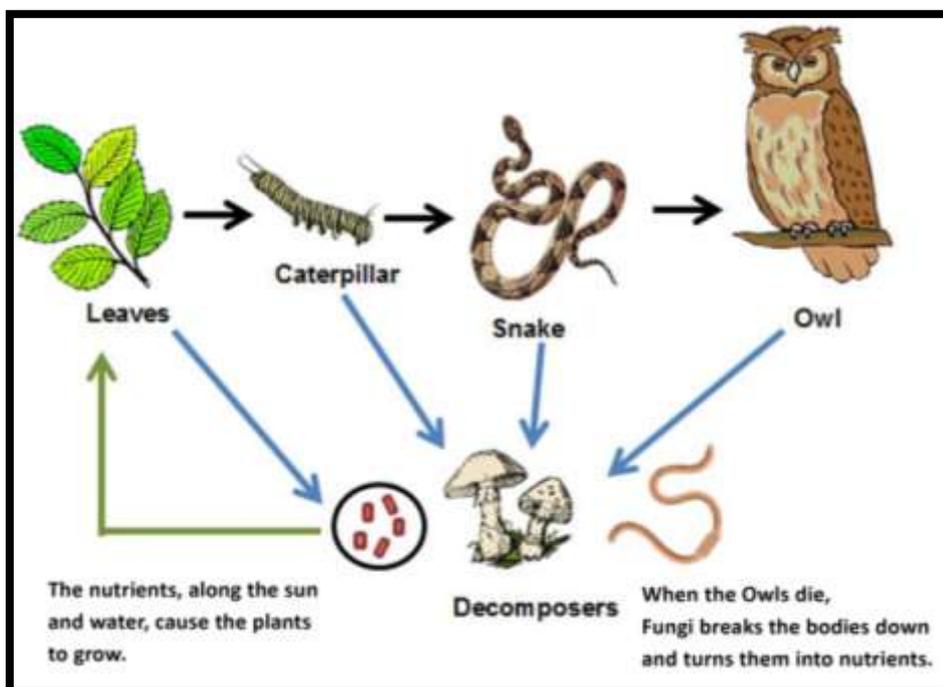
We humans get our energy from plants and animals.

Now let us see how the plants get their energy?

They get their energy from the food that they make for themselves.

- 1). Energy In a food chain starts from the Sun
- 2). Energy from the Sun is used up by plants to produce food
So the energy from Sun passes on to the Plants .
- 3). Next this plant is turn eaten by say a Rabbit.
- 4). So rabbit gets its energy from the Plants.
- 5).This Rabbit in turn gets eaten up by a snake. So the snake gets its energy from the Rabbit.
- 6). The snake then gets eaten by say a Jackal. So the jackal gets the energy from the snake
- 7). The snake in turn gets eaten by the tiger.
- 8). The tiger when dies is eaten by the vulture
- 9) The vulture, a scavenger when dies, is eaten by small microbes
- 10) These microbes in soil make it more fertile and give energy to the plant growing.

FOOD CHAIN



- A food chain is a chain that shows the sequence of who eats whom in a biological community (an ecosystem) to obtain nutrition. It shows the interdependence of various organisms on one another for their survival.
- Since, it shows 'Who eats whom', it displays how the energy is transferred from one organism to another.

1. The food chain begins with the plants who produce their own food and are called **Primary Producers or Autotrophs-**

2. Next come organisms that eat only plants. These organisms are called **Herbivores or Primary Consumers**

- E.g. rabbits, cow, deer, giraffe

3. The next link in the chain are:

a) Animals that eat flesh of other animals. These are called **Carnivores**

- E.g. snake that eats rabbits, lion, tiger, jackal, wolf

b) Animals that eat both plants as well as flesh of other animals-called Omnivores.

Both Carnivores and Omnivores are also called Secondary Consumers

4.. They next link is that of top level consumers that eat secondary consumers.

They are called **Tertiary Consumers**

- All big cats, such as tigers, lions, pumas and jaguars
- They are also called Apex Predators, because they have no predators in their natural environment.
- an exception to this is the leopard, which is occasionally preyed by lions and tigers, with which they share habitats.

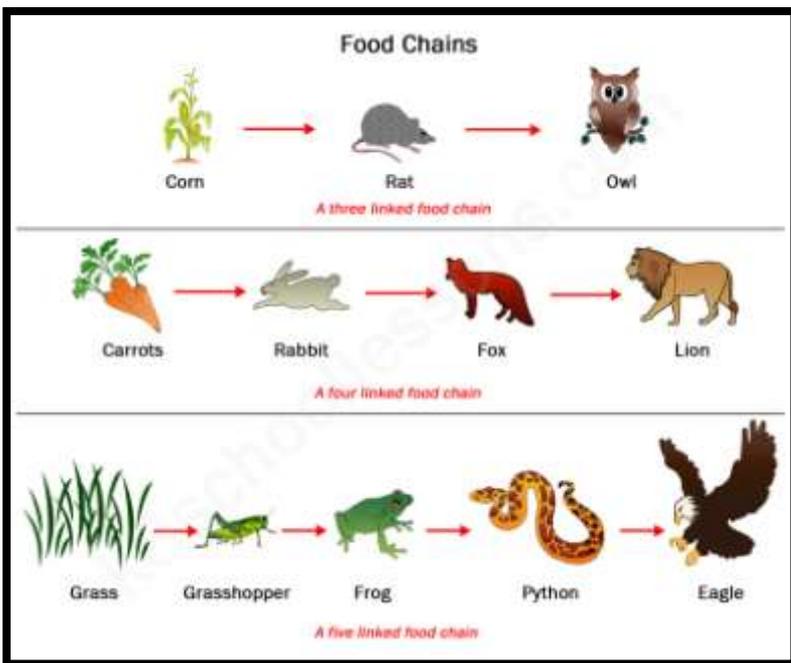
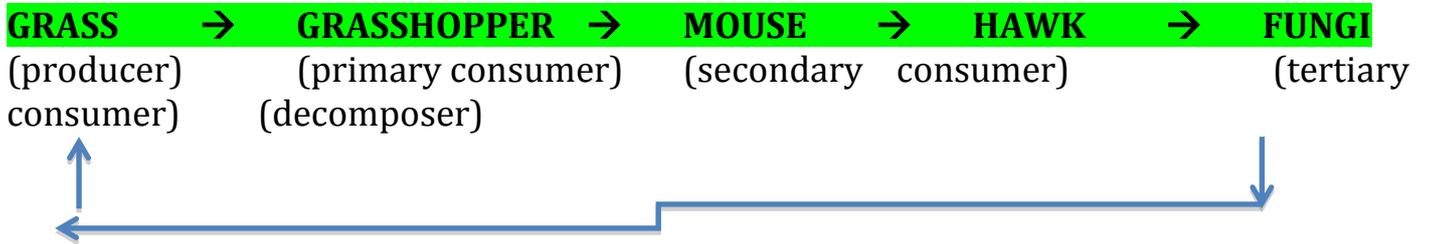
5. The next in link are the animals that feed on carrion (i.e dead animals) or dead plant materials. They are called **Scavengers**. They do not hunt for their prey like carnivores but instead feed on dead plants and animals .

- eg. Vultures, Hyenas, Kites, Eagles etc.
- Scavengers play an important role the food web. They keep an ecosystem free of the bodies of dead animals, or carrion.
- Scavengers break down this organic material and recycle it into the ecosystem as nutrients

6. Once the Scavengers leave off , the **Decomposers** take over on them and break them down.

- Decomposers are microorganisms which break down dead and decaying plants and animals .
- By breaking down the dead and decaying matter they help the plants by returning essential nutrients back to the soil

- These nutrients (also called humus) along with water and sunlight help the plants to grow.
- For e.g. Bacteria, fungi, some insects and snails are decomposers. E.g. Grass gets eaten by grasshopper who gets eaten by a mouse who gets eaten by a hawk. After the hawk dies, fungi and other decomposers break down the dead hawk and turn its remains into nutrients which get released into soil and helps in the growth of plants.



FOOD WEB

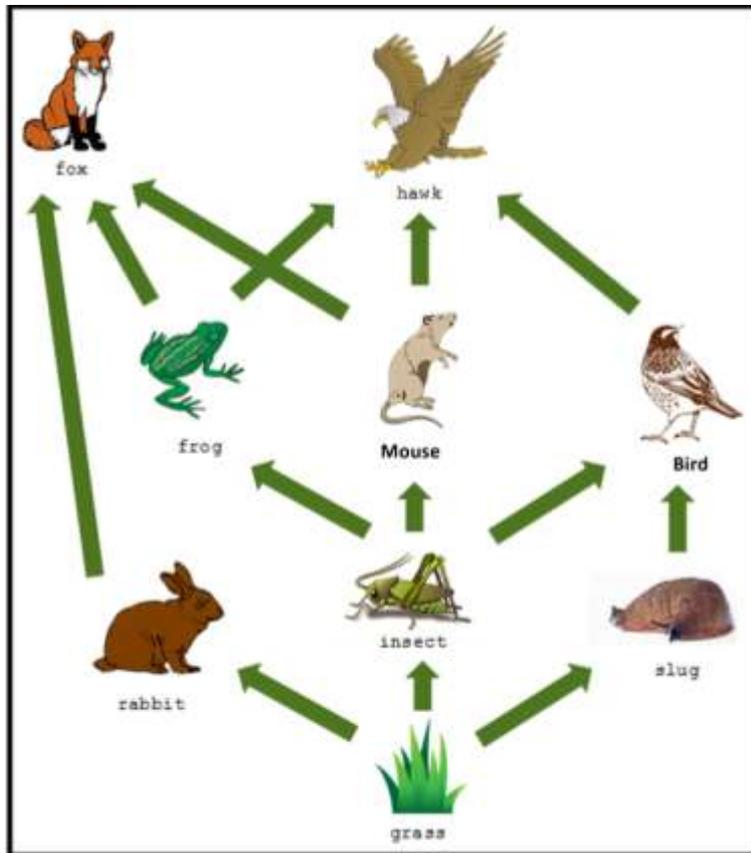
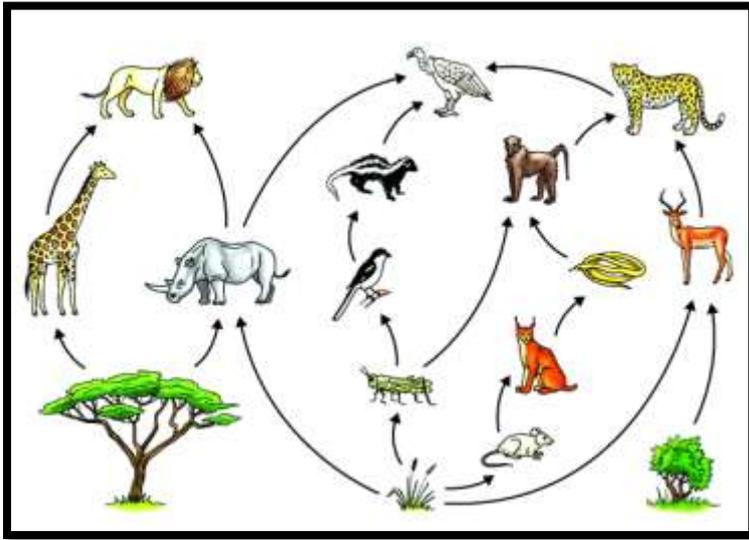
- In nature many food chains operates simultaneously.
- **For e.g., a bird or a lizard can eat a grasshopper. This bird can then be eaten by a snake or a bear. But instead of eating the bird the bear can also eat plants.**
- **Hence a network of interconnecting food chains called a food web gets formed.**

food web (or food cycle) is a natural interconnection of food chains and a graphical representation (usually an image) of what-eats-what in an ecological community.

DIFF BETWEEN FOOD CHAIN & FOOD WEB

A food web consists of many food chains. A food chain only follows just one path as animals find food. eg: A hawk eats a snake, which has eaten a frog, which has eaten a grasshopper, which has eaten grass. A food web shows the many different paths through which the plants and animals are connected.

FOOD WEB



CROP PRODUCTION

The practice of growing plants on a large scale for food or other purposes is called Agriculture.

Plant that are grown in large quantities in a particular area or region during a particular season are called Crops.

Cultivation of crops involves a number of stages:

A. Preparation of soil

- The soil is first loosened or turned using ploughs or tractors. This is called **tilling** or **ploughing**.
- Ploughing / tilling helps by:
 - a. Allowing roots to penetrate deeply
 - b. To restore nutrient rich soil on the top layer
 - c. It helps in growth of Earthworms and Microbes

B. Adding manure or fertilizers

- Manures and fertilizers are added so as to replenish the soil with important nutrients also protect them from pests.

C. Sowing of seeds

- Seeds which are healthy / good quality are sown at a distance to prevent over crowding
- HYV (High Yielding Variety), of seeds develop by scientist are being preferred now a days. Though they require more water, they yield good quality crops

D. Irrigation

- Germination of seeds also requires water besides air and warmth, Thus crops are supplied water by artificial means at regular intervals and this is called irrigation.
- Irrigation can be done by various sources like wells, tube-wells, ponds, rivers, lakes, dams and canals.



Drip irrigation systems distribute **water** through a network of valves, pipes, tubing, and emitters. The other name of this irrigation system is trickle irrigation. Water is made to drip a very low

If you apply pumping system in which you make use of pipes to distribute water with the help of spray heads which moisten your whole soil surface, then this system is known as **Spray or Sprinkler Irrigation system**.

E. Harvesting

The process of cutting and gathering crops after they mature is called Harvesting. The crops are pulled out or cut close to the ground. This is done manually using sickles or by using machines.

F. Threshing & Winnowing

-**Threshing** is the process of loosening the edible part of grain (or other crop) from the husks and straw to which it is attached. It is the step in grain preparation after reaping and before winnowing, which separates the grain from the chaff.

-It can be done manually or by using machines.

-Winnowing is an agricultural method for separating grain from chaff. It is also used to remove weevils or other pests from stored grain. The threshed crops are tossed in the air to separate the lighter particles of chaff, dirt and even pests from them. It is done using a winnowing fan.

G. Storage

Crop Storage is an essential and unavoidable part of the **crop** production process

-The harvested crops need to be kept safe from moisture, insects and rats. Hence they need to be stored properly.

For this:

- The grains are dried in the sun to reduce the moisture in them.
- The grains are stored in jute bags or metallic bins.
- The large scale storage of grains is done in Silos and granaries to protect them from pests like rats and insects.

TYPES OF CROPS

There are 3 types of crops:

1. Kharif Crops-These crops are grown in rainy season from June to September
 - E.g. Paddy (Rice), Groundnut, Cotton, Maize, Soyabean, etc.
2. Rabi Crops-These crops are grown in winter season from October to March.
 - e.g. Wheat, Pea, Mustard, Gram, Linseed
3. Zaid Crops-These crops are grown for a short period of time.
 - They are grown between the harvest of the Rabi crops and the sowing of the Kharif crops.
 - E.g. Seasonal fruits and Vegetables

TYPES OF FARMING

There are 3 types of farming:

1. Commercial Farming:
 - Farmers own large farm lands
 - Grow large quantities of food crops to sell in the market for profit
2. Subsistence Farming:
 - This type of farming meets basic survival needs of people
 - It is done by small farmers, who mostly work on lands of other people on daily wages, or given pieces of land on rent or lease.
 - If unable to pay the rent the farmers sometimes has to give some part of the crop grown by him to the landlord.
3. Mixed Farming:
 - Done by farmers who have very large fields where they not only grow crops but also rear animals like goats and cows.