# SCIENCE

## STANDARD SEVEN

## TERM I

சின்னஞ்சிறு குருவி போலே நீ
திரிந்து பறந்துவா பாப்பா
வண்ணப் பறவைகளைக் கண்டு நீ
மனதில் மகிழ்ச்சி கொள்ளு பாப்பா

கொத்தித் திரியும் அந்தக் கோழி – அதைக்
கூட்டி விளையாடு பாப்பா
எத்தித் திருடும் அந்தக் காக்காய் – அதற்கு
இரக்கப்பட வேணுமடி பாப்பா

வண்டி இழுக்கும் நல்ல குதிரை – நெல்லு
வயலில் உழுது வரும் மாடு
அண்டிப் பிழைக்கும் நம்மை ஆடு – இதை
ஆதரிக்க வேணுமடி பாப்பா

வாலைக் குழைத்து வரும் நாய்தான்– அது
மனிதர்க்குத் தோழனடி பாப்பா

–மகாகவி பாரதியார்

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Chandra, while preparing for a competition, came across the above Bharathiar's poetry. She was astonished and admired that how Bharathiar loved animals and presented its characters and uses in sweet and short evergreen lines. She ran to her mother to show the poem.

Amazed by her daughter's interest, Chandra's mother told her that since time immemorial man coexisted with birds and animals. Everyday from dawn to dusk man's life is influenced by animals. He woke up listening to the call of birds. He had to depend on animals for food, clothing, transport, fuel etc... The buzzing of bees was his first music and the dance of the peacock was his first entertainment. Dogs and cats were his first playmates.

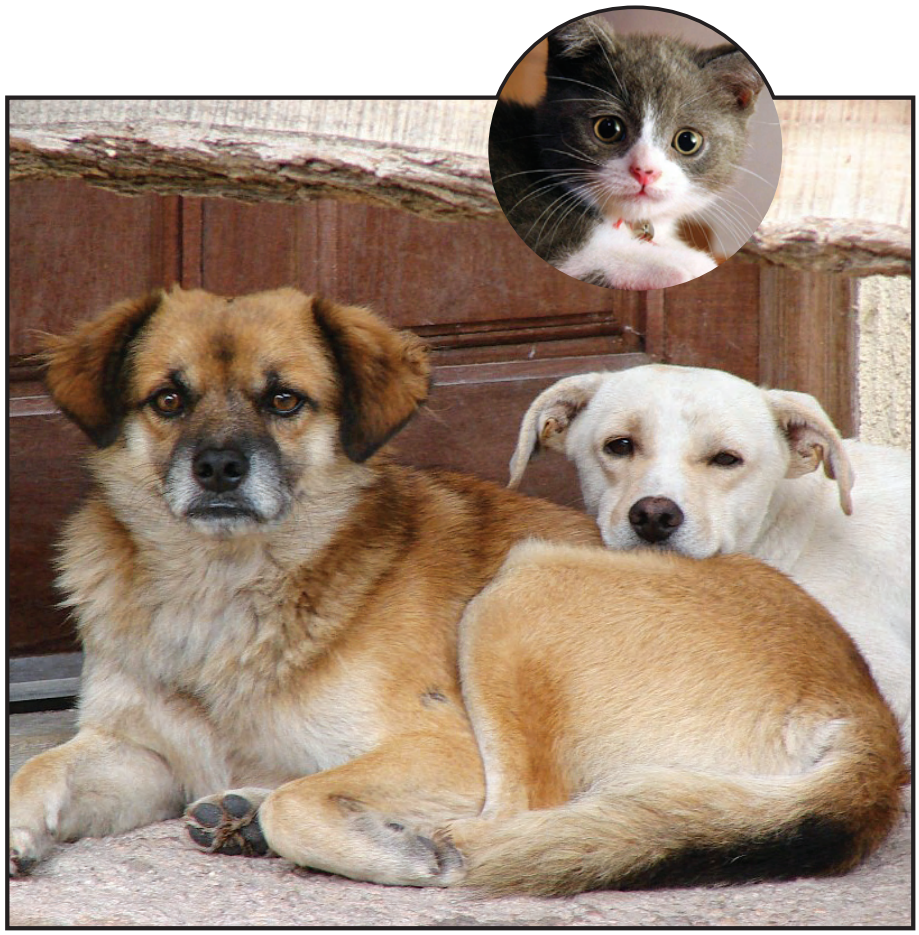

Fig 1.1 Pet animals

**ACTIVITY - 1.1**

Children, do you have a pet animal?. Shall we write down what we do when our pet is.....

a) hungry.....

b) feeling hot or cold .....

c) teased by someone .....

d) hurt .....

The life on this planet Earth is sustained by plants and animals. With the development of knowledge and technology, his dependance on animals for economic purpose increased. The balance in nature will be upset if the relationship between human and animals deteriorates.

## ACTIVITY - 1.2

Children, shall we fill in the blank spaces?

| Name of the Animal | Why do we keep them? |
|---|---|
| 1. Dog | ..... |
| 2. ..... | gives milk |
| 3. ..... | pulls cart |
| 4. Ox | ..... |
| 5. Hen | ..... |
| 6. Fish | ..... |
| 7. ..... | we love it |
| 8. Honey bee | ..... |

Fig 1.2 (a) Jersey

Fig 1.2 (b) Kangeyam



## 1.1. USES OF ANIMALS

Animals and their products are of great use to man. Based on the utility of animals, they are classified into three groups

### 1. Food yielding animals

Animals are reared for milk, eggs and meat. Breeds of cows are mainly raised for milk eg. Jersey . Certain breeds of goat are reared for milk and meat. Honey bees give us honey. Fishes are a good source of protein.

Fig 1.3 Llama

### 2. Fibre yielding animals

Animals such as sheep, Llama and goat provide us fur. The fur is processed into wool. Silk moth gives us silk fibre.

### 3.Draught animals

Animals which are used for ploughing and transporting are called draught animals. Bullock(kangeyam),Ox, horse, elephant, donkey, etc are employed in farm activities and transport.

**MORE TO KNOW**

Some cows produce around 16 litres of milk a day or 6000 litres a year.

## ACTIVITY - 1.3

Observe the care taken by milkman on the cow in the shed and the care taken by your family on your pet animal. List down your observations.

| Dog | Cow |
|---|---|
| 1. | |
| 2. | |
| 3. | |
| 4. | |

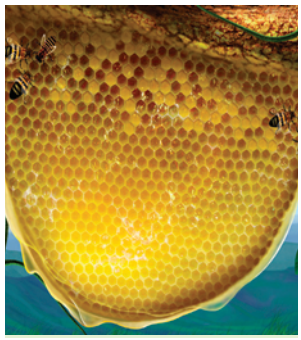

Fig 1.4 Honey Comb

Fig 1.5 Milk

Fig 1.6 Silk

## 1.2. ANIMAL PRODUCTS

Animals provide us a variety of products like wool, silk, milk, honey, meat, leather, pearl, egg, lac and so on. Let us learn about some.

1. Wool: Wool is obtained from hairs on the bodies of animals such as sheep, llama and goat. It is used to make sweaters, shawls, blankets, socks, hand gloves etc.
2. Meat: Animals such as goat, sheep, pig, poultry birds, prawn, crab etc. yield flesh as food.
3. Silk: Silk is obtained from silkworm and it is used for making silk clothes.
4. Leather: The skin of animals such as goat, sheep, and cattle is used for manufacturing leather goods( bags, shoes, purses, suitcases, belts).
5. Pearl : Pearl is a valuable gem obtained from pearl oysters and is used in making ornaments.
6. Lac : Some insects secrete a resin like substance called lac. It is used for making paints, varnish, printing inks and cosmetics.
7. Milk: Animals like cows, buffaloes and goats give milk as food.
8. Honey: Honey is obtained from honey bees. It is consumed along with food and used in the preparation of certain medicines.
9. Egg: Poultry birds such as hen, duck, goose and turkey give us eggs as food.

## MORE TO KNOW

In 2004 December, some tribes that live in the forests of Andaman islands noticed the animals behaving in a different manner. They guessed some danger. So they moved to a safer part of the island. Soon after their move the islands were hit by Tsunami, but the people were saved.

## 1.3. ANIMAL FIBRES

One day Selvan saw his grandmother wearing a shawl and his mother asked him

Fig 1.7 Sheep

to wear a sweater. He was curious to know why they should wear these clothes? His mother said that woollen clothes trap air and act as bad conductor of heat or cold . Hence they keep us warm during winter.

### Wool

Wool is a thick coat of hairy fibres(fleece) obtained from sheep, goat, yak and other animals. It is composed of a protein called keratin. Several breeds of sheep are reared in our country that yield different kinds of wool. The skin of sheep has two types of hair.

a) Coarse beard hair and b) Fine soft under hair.

**MORE TO KNOW**

Australian scientists have invented a way of removing wool from Sheep without shearing. The new wool harvest technology is called Bioclip.

**ACTIVITY - 1.4**

Let us collect pictures of animals that produce wool and paste them in the scrapbook.

Normally fine hairs provide the fibres for making wool. **Yak wool** is common in Tibet and Ladakh. **Angora wool** is obtained from Angora goats which are found in Jammu and Kashmir. The wool from Angora goat is called as “Mohair”. The underhair of Kashmiri goat (Pashmina) is woven into fine shawl. It is very soft and expensive.

### Processing of wool

There are many steps involved in processing the fur into wool. The process of cutting off the woollen fleece of sheep with a thin layer of skin is called **shearing**.

The wool is used to manufacture sweaters, shawls, blankets, hand gloves etc.

### Silk

Silk is also a natural animal fibre. Silk worm secretes the silk fibre. The best known type of silk is obtained from the cocoon of larvae of mulberry silkworm. Silk fabric was first developed in ancient China.

### Uses of Silk

Silk is used for making silk clothes, parachutes, insulation coils for telephone and wireless receivers.

**MORE TO KNOW**

Pure silk is one of the finest natural fibres and is said to be the **“queen of fibres”**

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## 1.4. SERICULTURE

Selvan and Valli attended a marriage function. They noticed that some of the women were wearing colourful sarees. Selvan asked his mother, why those sarees are shining?. His mother told him that those sarees are made of silk.

The rearing of silk worms for obtaining silk is called **Sericulture**. It is a very old occupation in India. The silk fibre is obtained from the cocoon of the silk moth. There are varieties of silk moths and the silk they yield is different in texture.

### The types of silk are

1. **Mulberry silk**
2. **Tassar silk**
3. **Eri silk**
4. **Muga silk**

The most common silk is mulberry silk. Mulberry silk is superior in quality because it is soft, lustrous and creamy white in colour. It is secreted by the silk producing glands of silkworm.

Steps of preparing silk fibre.

1. A female silk moth lays hundreds of eggs at a time.
2. The eggs are kept under hygienic conditions and under suitable temperature.
3. When the eggs hatch into larvae, they are fed on mulberry leaves.
4. After 25 to 30 days of feeding, they spin a protective case around them called cocoons.
5. The cocoons are dipped in hot water and the silk fibres are separated.
6. The process of taking out threads from the cocoon is called **Reeling**.
7. The thread is woven into silk cloth.

### MORE TO KNOW

It is believed that silk was first dicovered in China by the Empress Si Ling Chi

India is the world's second largest producer of Silk.

Kancheepuram, Siruvanthadu, Thirubhuvanam and Arani are famous for silk in Tamil Nadu.

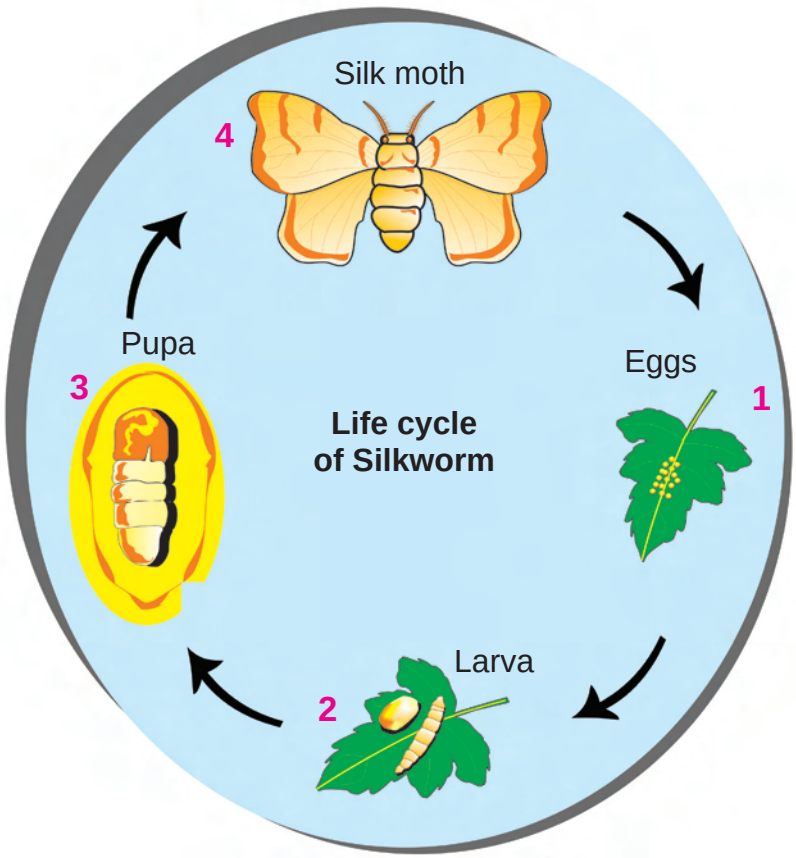



Fig 1.8 Life cycle of Silkworm

### ACTIVITY - 1.5

Let us mark the places in the map of Tamil Nadu where silk is produced and woven into fibres and clothes.

Fig 1.9 Queen bee

Fig 1.10 Drone bee

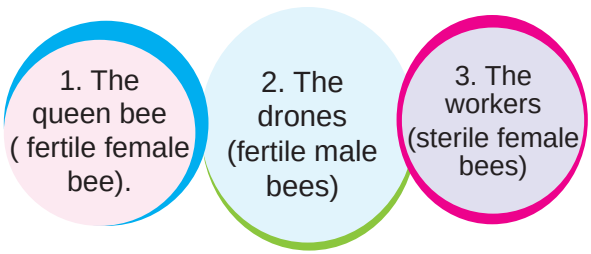
Fig 1.11 Worker bee

## 1.5. APICULTURE

I am used in cakes.
I am found in sweets.
I am used in medicines.
I am manufatured by bees.
Can you guess who am I?
Yes, I am **HONEY**.

### Where do bees live?

Honey bees live in beehives. A beehive consists of numerous small compartments called honey combs. Bees live in colonies. There are three kinds of bees in a beehive. They are




There is only one queen bee in a beehive. The work of the queen bee is to lay eggs. There are a few hundreds of male bees which help in reproduction. The worker bees are thousands in number. They perform various functions.

Honey is used as food. It is used in the preparation of certain medicines in Siddha, Ayurveda and Unani. Bees also produce wax, which is used for making candles. Some Indian varieties of bees are

1. Rock bee (*Apis dorsata* )
2. Little bee (*Apis florea* ) and
3. Indian bee (*Apis indica*)

**MORE TO KNOW**

Composition of Honey.

| | | |
|---|---|---|
| Sugar | - | 75% |
| Water | - | 17% |
| Minerals | - | 8% |

Nowadays, bee-keeping is practised to produce more honey.The rearing of honey bees to produce honey in large scale is known as **apiculture.** A well known Italian breed called *Apis mellifera* is the best for bee-keeping because it has high honey collecting capacity and it does not sting much.

**ACTIVITY - 1.6**

Shall we check if the honey is pure or not?

1. Let us take a glass of water.
2. Add a drop of honey to it.
3. If the drop of honey reaches the bottom without dissolving, then the honey is pure.
4. If the drop of honey dissolves before reaching the bottom then the honey is impure.

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Fig 1.12 Poultry farm

## 1.6. POULTRY

Selvan and Valli eagerly wait for lunch everyday. They get an egg with their midday meal in school. Selvan wants to know from where they get huge amount of eggs.

Valli said that they get the eggs from poultry.

The rearing of hens and other fowls to produce eggs and flesh is called **Poultry farming**. Several kinds of birds like hen, duck, turkey, goose etc.. are reared for the production of eggs and flesh. The place where the fowls are reared is called **Poultry farm**.

Fig 1.13 Broiler Egg - Country Egg

Namakkal district in Tamil nadu is famous for poultry industry.

In our country, hen is the most favourite domestic bird. Poultry keeping has developed into a very big industry. Some varieties of hens are reared for the production of eggs only. Such hens are called **layers.** There are some varieties of hens grown for flesh. They are called **broilers**.

The poultry house should be well lighted and well ventilated. The common poultry feed is grains and lots of fresh water. Hens that hatch eggs are called **Broody hens**. They sit on eggs and keep them warm. This is known as **incubation**. The eggs hatch after 21 days.

**Expand TAPCO - Tamil Nadu Poultry Development Corporation.**

### Silver Revolution

The massive step taken in India to increase egg production by adopting enlightened practices of poultry is called Silver Revolution.

**ACTIVITY-1.7**

1. Take a broiler egg and a country egg. Differentiate these two eggs.
2. Try making penguins out of egg shells and eye drop filler caps.

**ACTIVITY-1.8**

We can distinguish a fresh egg from a rotten one by putting them in a bowl of water.

The fresh egg will sink. But the rotten one will float.

## 1.7. ANIMAL PROTECTION AND MAINTENANCE

Ever since human beings appeared on the earth, they have been living with animals. Plants and animals are dependent on each other. We have to protect them to maintain the balance in nature because our own survival depends on this.

### Domestic animals can be cared by

1. Providing animals with good feed and clean drinking water to keep them fit and healthy.
2. Providing shelters that are clean, airy and well lighted .
3. Protecting them from diseases

**MORE TO KNOW**

Some of the famous wildlife sanctuaries in Tamil Nadu are Vedanthangal, Mudumalai, Mundanthurai, Kalakadu and Kodiakarai.

### Care of Wildlife

As people use more and more land to cultivate crops, graze cattle, build houses and factories, animals and plants are being forced out of existence. Poaching, pollution and use of excess pesticides have killed so many plants and animals. Some have been completely wiped out from the earth. If an animal no longer exists, it is said to be extinct. If they are in danger of becoming extinct, they are said to be **endangered**. Wildlife protection and maintenance is called **wildlife conservation**. Some of the conservation measures are :

1. setting up of National Parks and Wildlife Sanctuaries.
2. stringent action against poaching.
3. discouraging deforestation.

**Wildlife and forest are the wealth and pride of a country. So it is our moral duty to protect the plants and animals. We can protect our animals by**

1. Not harming any animal or plant.
2. Growing trees that provide home to birds and insects.
3. Not buying animal products that are banned. eg. Tusk

**MORE TO KNOW**

Blue Cross is a registered animal welfare society. It helps to find homes for uncared animals and promote animal protection.

**ACTIVITY-1.9**

Collect different types of animal eggs. Display in the classroom.

Hen, duck, lizard, crow, turkey.

Varaiadu - The state animal of Tamil Nadu

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## EVALUATION

### 1. PICK OUT THE CORRECT ANSWER :-

1. Fibres obtained from an insect _____
   (Wool / Silk)
2. _____ is reared in a poultry farm.
   (Buffalo / Hen)
3. There is only one_____ bee in a bee hive.
   (queen / drone)
4. After incubation, the hen's egg hatch in _____days.
   (21 / 31)
5. A sheep has a coat of wool for _____
   (man / itself)

### 2. The following jumbled words denote the stages in the life cycle of a silkworm. Could you write the correct sequence.

THOM, GEGS, VARAL, APPU

MOTH -> _____ -> _____ -> _____

### 3. On the way home you notice a goat with a broken leg. You feel sad and want to help it. Write down the things you would do.

a) _____

b) _____

c) _____

### 4. Complete the chart given below by observing the following animals in your surrounding.

crow, cow, lizard,donkey,goat, horse, housefly, ant, monkey, butterfly, mosquito, dog, cat.

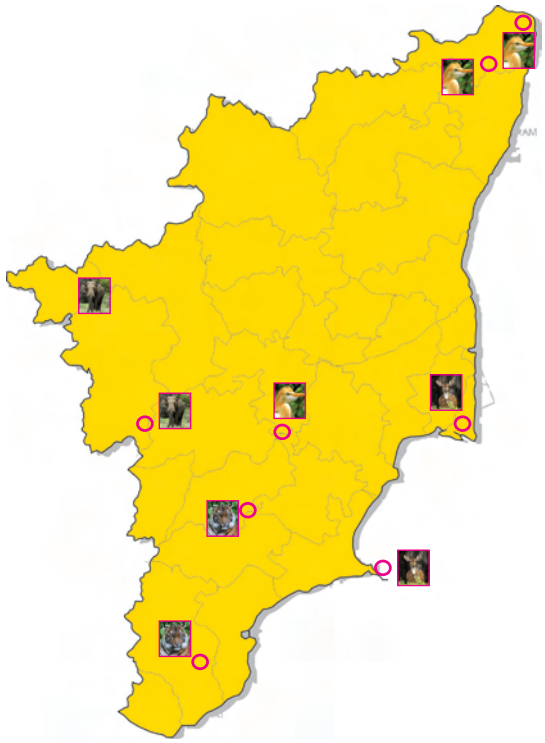
| Sl.No. | Animal | Sound it makes | Food it eats | Where it lives | Relationship with man |
|---|---|---|---|---|---|
| 1. | dog | wow, wow | rice, meat | kennel | friend, guard |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

**5. In the given map of Tamilnadu some famous wildlife sanctuaries are marked.**

(a) Name the places.

(b) Find out the animals / birds which are found there.

(c) Mark your place of residence and find the name of the sanctuary near your home.



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## FURTHER REFERENCE

### Books

Life (4th edition) - Lewis. Gaffin. Hoefnagles. Parker. Mcgraw Hill, New York.

Biology Understanding Life (3 rd edition) - Sandra Alters.
Jones and Barthlett Publishers, U.K.

### Websites

http://www.jbpub.com/biology.

www.nationalgeographic.com.

### Places of scientific importance for visit

Aringar Anna zoologicial Park, Vandalur, Chennai.

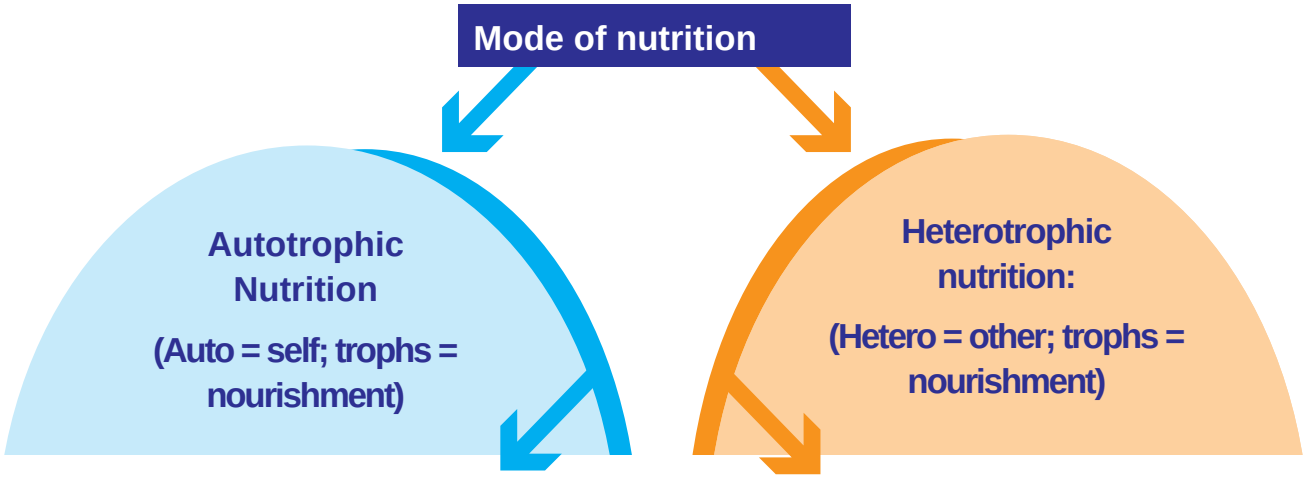
Fig 2.1. Nutritious food

Food is a basic necessity for all living organisms to survive. It is because food provides energy to all living organisms to do their life activities. Food also helps them to grow and build their bodies. How do living organisms obtain their food? Green plants can make their own food by using sunlight, water and carbon dioxide. Animals cannot make their own food. They depend on plants directly or indirectly for their food. The mode of taking food by an organism and utilizing it by the body is called **nutrition**.

## 2.1. MODES OF NUTRITION IN PLANTS

There are two modes of nutrition in organisms. They are autotrophic and heterotrophic nutrition.

## 2.2. AUTOTROPHIC & HETEROTROPHIC NUTRITION




Green plants are the only organisms which can synthesize food for themselves and also provide food for other organisms including us. The mode of nutrition in which organisms make their own food is called **Autotrophic Nutrition** and such organisms are called **autotrophs**.

**eg. Green plants.**

Non-green plants and most animals (like us) take in readymade food from plants and other animals. The mode of nutrition in which organisms depend on others for their food is called **Heterotrophic Nutrition** and those organisms are called **heterotrophs**. eg. All animals, including human beings.

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### 2.2.1. PHOTOSYNTHESIS

Dear children, we shall be surprised if we could peep inside a leaf and find that sunlight comes into a leaf through the leaf's surface. Inside, the leaves also have a wonderful green substance called **chlorophyll**.

At the same time air comes into the leaf through tiny openings named **stomata** and water moves up from roots below.

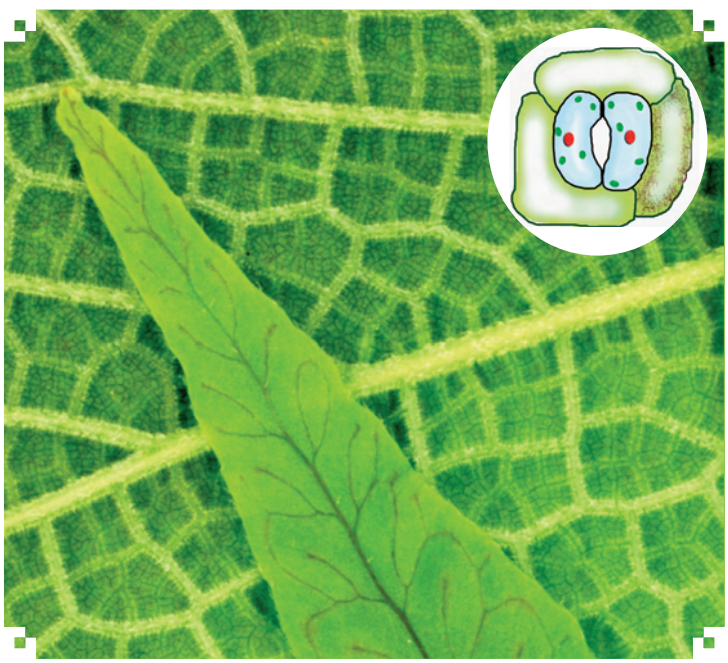

Fig 2.2 Leaf - (inset) Stomata

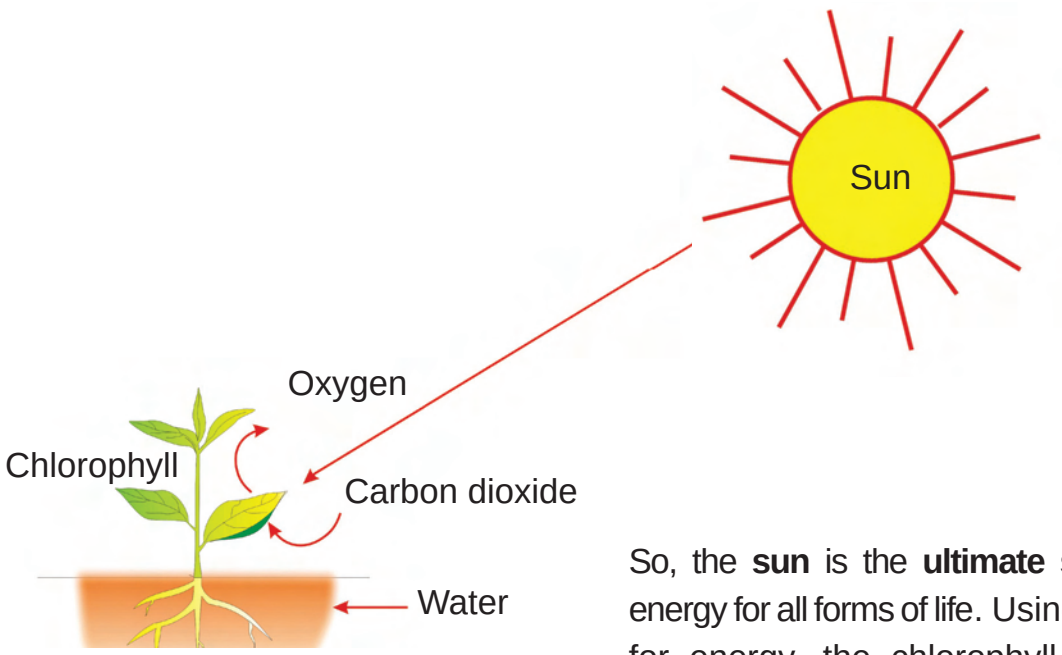


Fig 2.3. Photosynthesis chart

Imagine what would happen if there is no sun? In the absence of the sun, there would be no photosynthesis. Hence, there would not be any food. In the absence of food, life would be impossible on earth.

So, the **sun** is the **ultimate source** of energy for all forms of life. Using sunlight for energy, the chlorophyll changes water and carbon dioxide into food for the plant.

The process of preparing food with the help of water, carbon dioxide, sunlight and chlorophyll in plants is called **photosynthesis**.

**Photosynthesis can be represented by the equation given below**

$$\text{Water} + \text{Carbon dioxide} \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \text{Starch} + \text{Oxygen}$$

*There are some leaves of plants which show different colours other than green. Can they do photosynthesis? Yes, they can. The huge amount of red, brown and other pigments eclipse the green colour.*

**ACTIVITY 2.1**

When the weather is sunny, let us put a steel bowl on a patch of grass. Leave the bowl for 5 days. No peeking! Lift the bowl and look at the grass. How is it different from the grass exposed to sunlight?

Fig 2.4 Leaves of various colours

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## 2.2.2. OTHER MODES OF NUTRITION IN PLANTS

There are some non-green plants which cannot prepare the food. They take readymade food prepared by other plants. They follow heterotrophic nutrition. They may be **saprophytes**, **parasites**, **insectivorous** plants etc.

**ACTIVITY 2.2**

Let us take a piece of bread. Moisten it and leave it for a few days. We can see the cotton like mass growing on it. What is it?

Fig 2.5 Bread mould

### Saprophytes

Sometimes we see umbrella-like structures growing on decaying matter on the road side during the rainy season. What are they? How do they get their nutrients?

These organisms are called **fungi**. They grow on dead organic matter. They produce digestive enzymes on the dead matter and change it into simple nutrients. They absorb the nutrients in dissolved form (solution) and utilize it. Such a mode of nutrition is called **saprotrophytic** nutrition and those plants are called **saprotrophytes**.

eg: mushroom, bread mould.

Fig 2.6 Mushroom

### Parasites

Shall we look at the picture 2.7 carefully. we can see yellow coloured tubular structures coiling around the stem of a tree. This is a plant called **cuscuta**. It cannot synthesize food. As it lacks chlorophyll, it depends on the tree on which it is climbing for food. The plant which provides food is called **host** and the plants which consumes it is called **parasite**.

Fig 2.7. Parasite cuscuta (Sadathari)

venus fly trap
(Insect entering)

Fig 2.8. Nepenthes (pitcher plant)

venus fly trap
(Insect trapped)

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## Insectivorous Plants

We know that many insects eat plants, but we shall be surprised to know that some plants eat insects.

Let us observe the picture 2.8 of venus fly trap, pitcher plant. They need to eat insects because their soil does not have certain nutrients like nitrogen for them to grow.

## Symbiotic Plants

There is yet another mode of nutrition in which two different types of organisms live together and mutually help each other for nutrition. Lichens are organisms that consist of a fungus and alga. The algae gives food to the fungus and the fungus absorbs water and minerals and gives to algae. Here, both the organisms help mutually. The phenomenon by which two different organisms live together for mutual help is called **symbiosis.** The organisms are called **symbionts.**

Fig 2.9. Lichens

## 2.3. NUTRITION IN ANIMALS:

Let us observe machines like a car, bus or a train etc. How do they work? They get energy to do work from fuels. Our body is also a machine. We get energy from the food that we eat. Food contains not only energy but also the raw materials needed for body's growth, maintenance and repair. Mostly animals take in solid food. This mode of nutrition is called **holozoic nutrition**.

Fig 2.10 Ingestion

### Nutrition includes five steps

#### 1. Ingestion

The process of taking food into the body is called **ingestion**. The mode of intake of food differs in different organisms. eg: Butterflies and bees suck the nectar of the flowers. Snakes (Python) and frogs swallow their food. Aquatic animals (Blue Whale) filter feed.

#### 2. Digestion

The process of breaking down of complex food into simple food with the help of enzymes is called **digestion**.

#### 3. Absorption

The process by which the digested food passes into the villi of the wall of the intestine is called **absorption**.

#### 4. Assimilation

The ways in which the absorbed food is utilized in cells is called **assimilation**.

#### 5. Egestion

The removal of undigested food through anus is called **egestion**.

## 2.4. NUTRITION IN AMOEBA

Amoeba is a unicellular organism. It lives in the stagnant water bodies. It feeds on microscopic organisms. Though amoeba is a one-cell animal, it takes in solid food through its body surface. So the mode of nutrition is holozoic. Whenever the food touches the body surface of amoeba, it engulfs the food with the help of pseudopodia (false feet) and forms the food vacuole. The food is digested with the help of enzymes inside the food vacuole. The digested food reaches the entire cell by diffusion. Amoeba uses the food for getting energy, making proteins for growth, etc. The undigested food is thrown out of the body through its body surfaces.

## 2.5. HUMAN DIGESTIVE SYSTEM

Think of any food that you like, a sweet, a fruit etc. Let us find out what happens to it when eaten. It passes through the digestive system. This system is made up of mouth, oesophagus, stomach, small intestine, large intestine and anus.

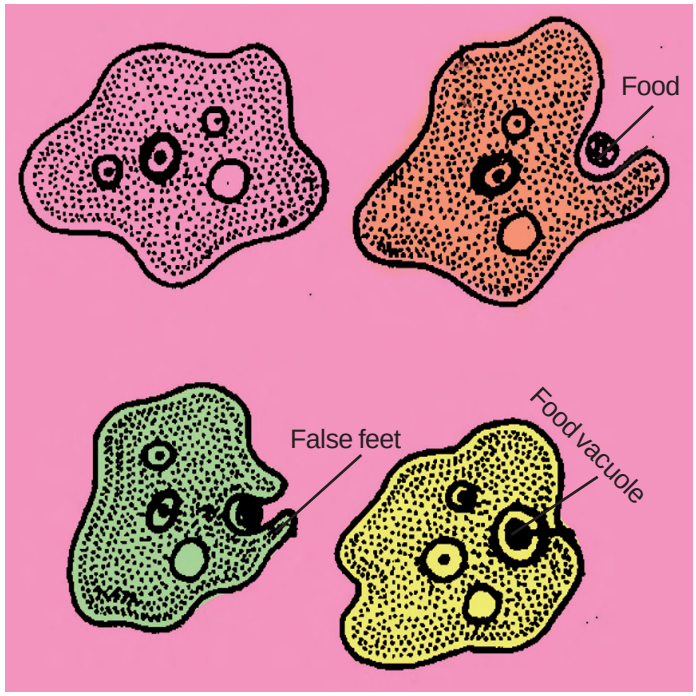



Fig 2.11 Ingestion of food in Amoeba

### Mouth

We ingest the food into mouth cavity through mouth. Mouth cavity contains teeth, tongue and salivary glands.

#### Teeth

Teeth help us to cut the food into small pieces, chew and grind it.

#### Salivary Glands

There are three pairs of salivary glands in our mouth. These glands secrete a watery fluid called saliva. It makes the food wet so that we can easily swallow it. It contains an enzyme called amylase which helps in the digestion of starch

#### Tongue

The tongue is an organ of taste. It helps to mix the food with saliva and make it wet. It also helps in rolling and pushing the food while swallowing.

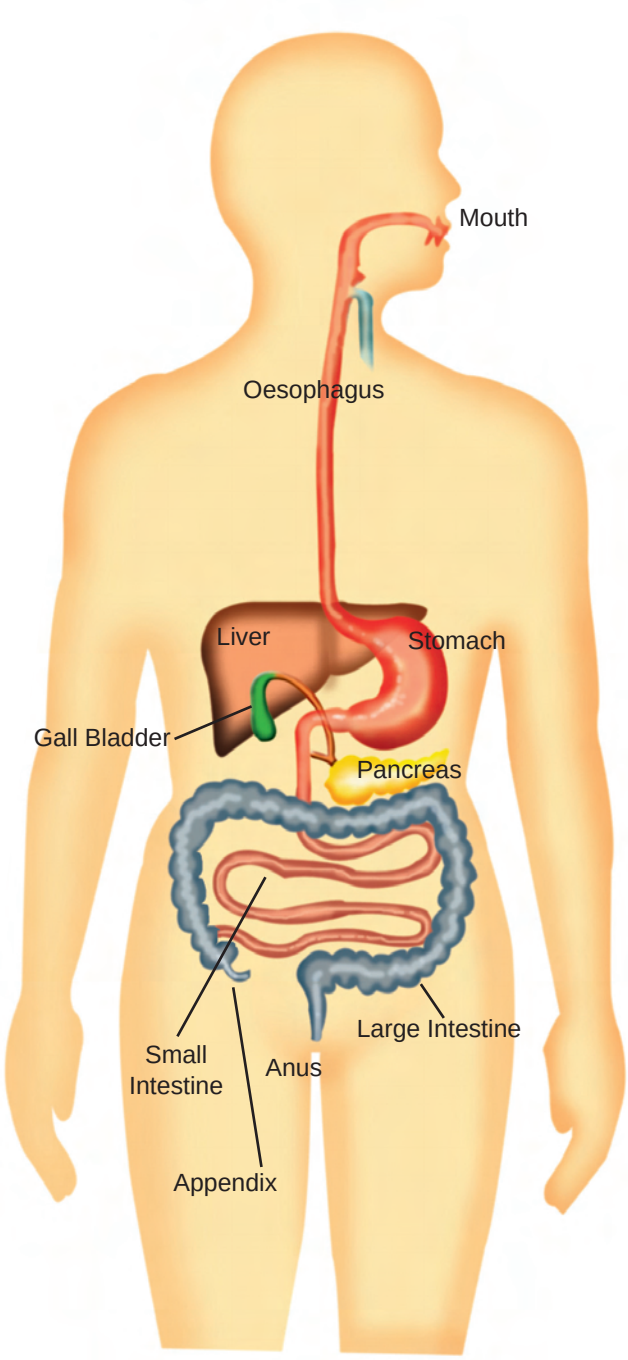



Fig 2.12. Digestive System of man

**MORE TO KNOW**

Food takes an average of 24 hours to pass all the way through the digestive system.

## Oesophagus

It is a tube which connects mouth and stomach. It is also known as food pipe. It helps to pass the food from the mouth to the stomach.

## Stomach

Stomach is a bag-like structure where the food is further digested. The food is churned. Stomach secretes digestive juice called gastric juice which helps to digest food.

## Small Intestine

It is a very long tube and is about 7 metre in length. Here the food is mixed with bile juice, pancreatic juice and intestinal juice. These juices help in completing the digestion.

At the end of digestion, carbohydrates are broken down into glucose, proteins into amino acids and fats into fatty acids. This digested food is absorbed by the villi in the small intestine.

## Large Intestine

It is about 1.5 metre in length and helps in absorbing water. It is the place for temporary storage of undigested food. Digestion does not take place here.

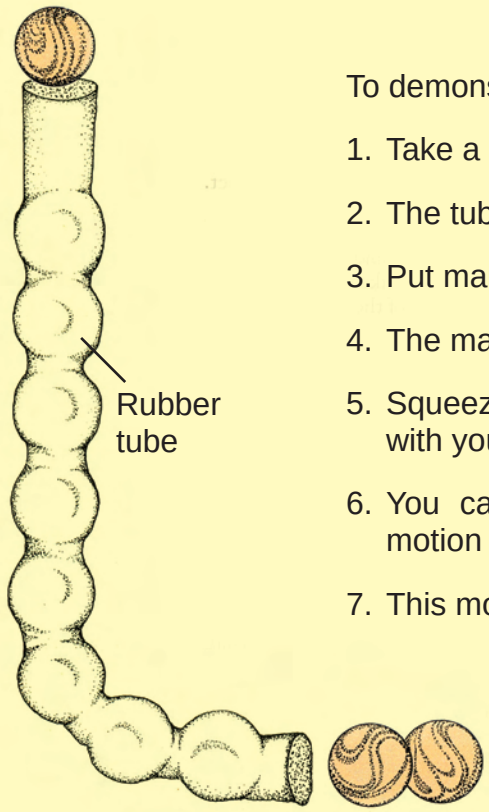
## Anus

The undigested food (faecal matter) is eliminated through anus and the process is called egestion.

Let us find out how the food moves in our digestive system.

Food in the digestive system moves from oesophagus to anus by rhythmic contraction and expansion of the wall of digestive system. This movement is called **peristalsis**.

## ACTIVITY 2.3




To demonstrate peristalsis.

1. Take a rubber tube and wet it inside.
2. The tube represents the food pipe.
3. Put many marbles into the tube.
4. The marbles represent food.
5. Squeeze the rubber tube from the top with your hand in a forward direction.
6. You can observe a kind of wave-like motion in the rubber tube.
7. This movement represents peristalsis.

### 2.5.1. TYPES OF TEETH

We all have two sets of teeth in our life time. The first set of teeth grows when a baby is about one year old. This set of teeth is called **milk teeth**. They are twenty in number. Milk teeth stay in a child up to the age of seven to eight years. When the milk teeth fall off, a new set of teeth grow. They are called **permanent teeth**. They are thirty-two in number. Of these, sixteen are in the upper jaw and sixteen are in the lower jaw. All the teeth in our mouth are not the same. There are four types of teeth. They are **incisors, canines, premolars** and **molars**.

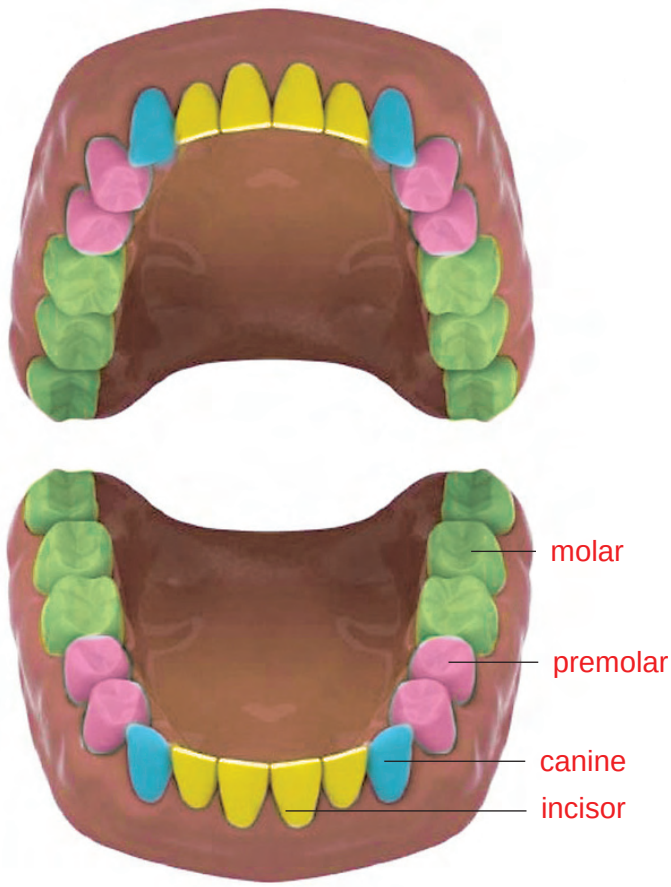



Fig 2.13. Types of Teeth

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**Incisors:** These are chisel shaped teeth at the front of the mouth. They are eight in number. Four are present in each jaw. These are used for biting the food.

**Canines:** These are sharp and pointed teeth. They are four in number and two are present in each jaw. Canines are used for cutting and tearing of food.

**Premolars:** These are large teeth behind canines on each side. They have large surface. They are eight in number and four are present in each jaw. They help in chewing and grinding the food.

**Molars:** These are very large teeth present just behind the premolars. They have more surface area than premolars. They are used for chewing and grinding of food like premolars. They are twelve in number and six are present in each jaw.

### Tooth Care

Permanent teeth serve for life time. They are not replaced like the milk teeth. Hence, great care should be taken for keeping the teeth clean.

The enamel in the teeth of children is much thinner than on the teeth of adults. So, teeth of children are more liable to decay than those of adults. Children should avoid very cold or very hot food. They should brush twice a day. Teeth should not be rubbed with hard things like brick powder.

## ACTIVITY 2.4

Let us take any fruit. Enjoy eating it. Now find out.

| Function | Teeth |
|---|---|
| Biting | |
| Tearing and cutting | |
| Chewing and grinding | |

"Valli... are there animals without teeth?"

"Yes Selva, Bluewhale, the largest mammal does not have teeth.

## MORE TO KNOW

Interesting facts about teeth in other animals.

1. Birds have no teeth.
2. Rats have continuously growing teeth.
3. The tusks of elephants are actually incisors that have become very long.
4. Very few adult humans have all the 32 teeth.

## 2.6. RUMINANTS

Shall we observe some grass eating animals such as goat, cow and buffalo. They keep on chewing even when they are not eating or at rest. They have an interesting digestive system. In fact they eat grass hurriedly and swallow quickly and store it in the first chamber of the stomach called **rumen**.

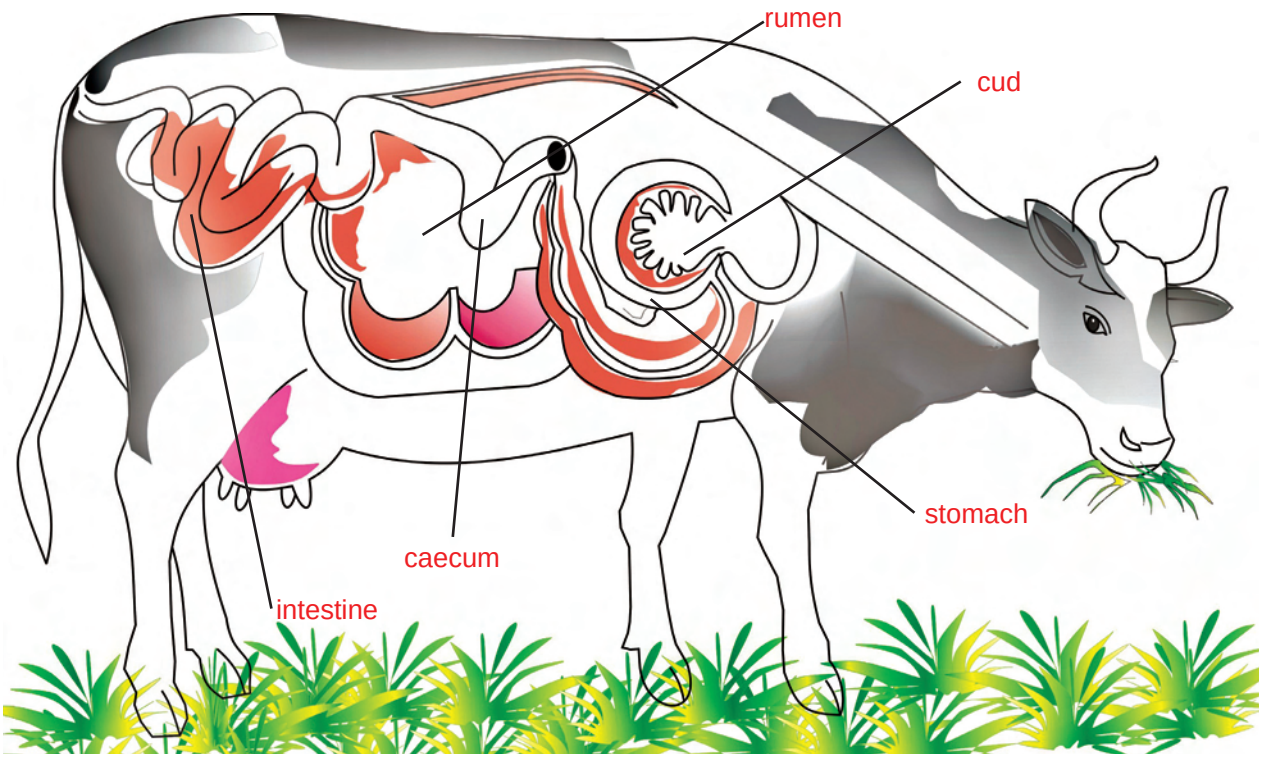



Fig 2.14 Ruminant - Cow

In the rumen, the grass is fermented with the help of certain bacteria and the partially digested grass is called cud. Later, the cud is brought back to the mouth in small quantities and the animal chews it. The process of chewing the cud is called **rumination**. Animals which chew the cud are called **ruminants**.

Grass is rich in cellulose which is a kind of carbohydrate. Herbivorous animals can digest it. The other animals and humans cannot digest cellulose. There is a sac-like structure called caecum between the small and large intestine in ruminants. This sac contains some bacteria which produce an enzyme called cellulase which digest the cellulose.

**ACTIVITY 2.5**

From the given list of animals, shall we find out the ruminants and the non-ruminants:

Bison, deer, horse, camel, rabbit, and donkey.

**MORE TO KNOW**

A Cow makes 40,000 to 60,000 jaw movements per day while it keeps on chewing and rechewing.

SCIENCE

## EVALUATION

1. From the given list of living things list out the autotrophs and heterotrophs.

grass, snake, neem tree, man, mushroom, amoeba, mango tree, cabbage, cow, sunflower.

| S.No. | AUTOTROPHS | HETEROTROPHS |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

2. Fill in the boxes with the given words to complete the equation for photosynthesis.

water, starch, oxygen, sunlight, carbon dioxide, chlorophyll.


3. Given below is a list of food items with their constituents. In the table given below write the names of the food that you took yesterday and tick the constituents in it.

| | |
|---|---|
| Idli | Carbohydrates, Dosai |
| proteins | Carbohydrates, proteins |
| Sambar | Protein, vitamin, minerals, fat |
| Rice | Carbohydrates |
| Egg | Protein, fat |
| Channa sundal | Protein |
| Vegetable poriyal | Vitamins, minerals |
| Vadai, milk | Fat, protein |
| Fish | Protein |
| Millet (Kambu/Cholam) | Carbohydrates |
| Greens | Vitamins, minerals |

Could you find out the nutrient missing in your diet.

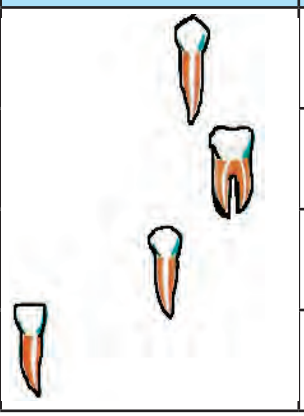
| | Food you took | Carbo hydrate | Protein | Fat | Vitamin | Mineral |
|---|---|---|---|---|---|---|
| Breakfast | | | | | | |
| Lunch | | | | | | |
| Snacks | | | | | | |
| Dinner | | | | | | |

4. Observe the teeth of your family members. Count the teeth and record below.

| S.No | Family member | Jaws | Incisors | Canines | Premolars | Molars |
|---|---|---|---|---|---|---|
| 1. | Father | U | | | | |
| | | L | | | | |
| 2. | Mother | U | | | | |
| | | L | | | | |
| 3. | Self | U | | | | |
| | | L | | | | |
| 4. | Brother | U | | | | |
| | | L | | | | |
| 5. | Sister | U | | | | |
| | | L | | | | |
| 6. | | U | | | | |
| | | L | | | | |

Dental formula of human being =I $\frac{2}{2}$; C $\frac{1}{1}$; PM $\frac{2}{2}$; M $\frac{3}{3}$ x2 = 32

5.Find out the teeth, (Look at the diagram) and list its use in human being.

| S.No | Picture of teeth | Name of the teeth | Uses |
|---|---|---|---|
| 1. |  | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |

## FURTHER REFERENCE

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