HICON SERIES

CLASS 5 LESSON 1

SCIENCE

PLANTS AND ANIMALS

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LESSON
PART 1

UNIT 1

PLANTS AND ANIMALS

LESSON-1 PLANT REPRODUCTION

BEFORE WE PROCEED

- Do plants reproduce ? What is reproduction ?
- Why do plants have flowers ?
- How are fruits formed ?
- Why do fruits have seeds?

SAY ALOUD

reproduce, fertilization, pollination, seed, embryo, germination

Let us find out more about reproduction in Plants

Living organisms produce their own kind. This process is called reproduction. Plants too reproduce. There are different ways by which plants produce new plants :

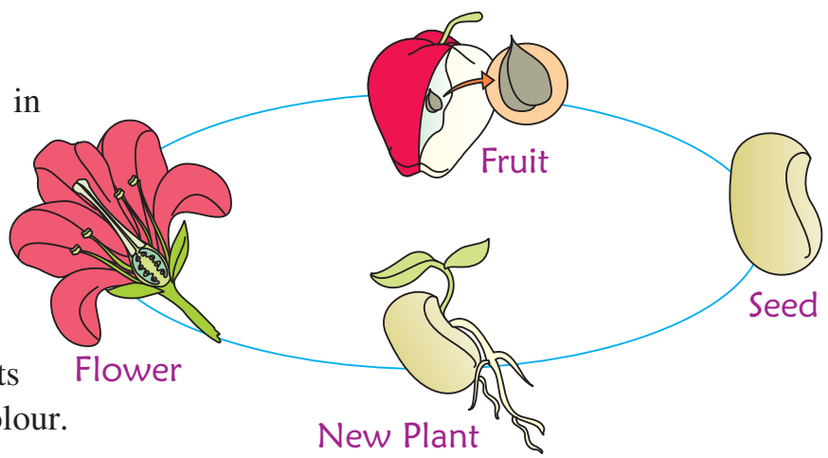
- Most plants reproduce through seeds. Eg : Mango
- Some plants reproduce through spores. Eg : Fern
- Some plants reproduce through their body-parts. Eg : Rose

Do you know?

The world's largest flower bearing plant Rafflesia is a total root parasite.

Reproduction from Seeds :

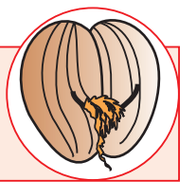
Flowers are important in making seeds. Seeds come from fruits after pollination and fertilisation. Thus, plants can grow other plants of their own kind from the seeds. Seeds of different plants differ in their shape, size and colour.

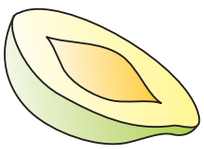


Fruits of some plants such as mango, coconut etc. have one seed while the fruits of some other plants such as papaya, pomegranate etc. have many seeds inside them.

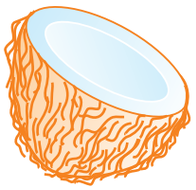
Do you know?

Double coconut is the largest known fruit, measuring about one metre in diameter. It is mostly found in MALDIVES.

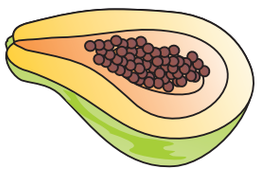




Mango



Coconut



Papaya

Pomegranate

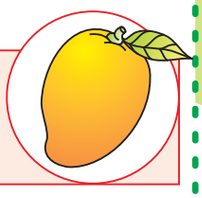
A single plant produces many seeds. But all of them do not get a chance to grow into new plants.

The reasons are :

- Some seeds are eaten by humans or birds and animals.
- Some seeds do not get the right conditions to grow.
- Some seeds are destroyed by strong winds or heavy rains.

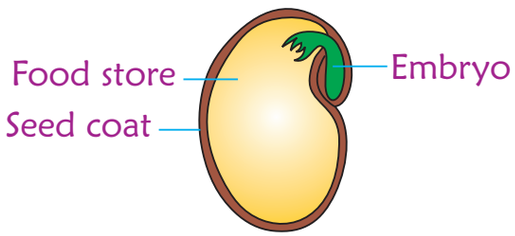
Do you know?

Mango is regarded as the king of fruits. India is the largest producer of mango. Our national fruit is Mango.



Structure of a Seed

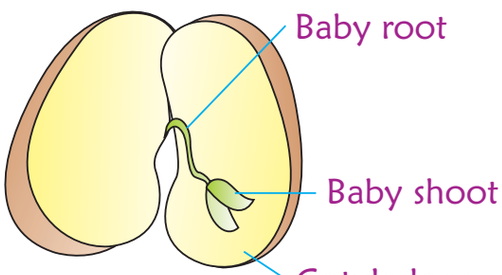
See the given seed. It is hard and cannot be broken easily because it has a thick outer covering called the seed coat. It protects the seed. On one side of the seed there is a scar. This is where the seed was attached to the fruit. On the top of the scar, we can observe a small hole. This hole allows water to enter the seed.



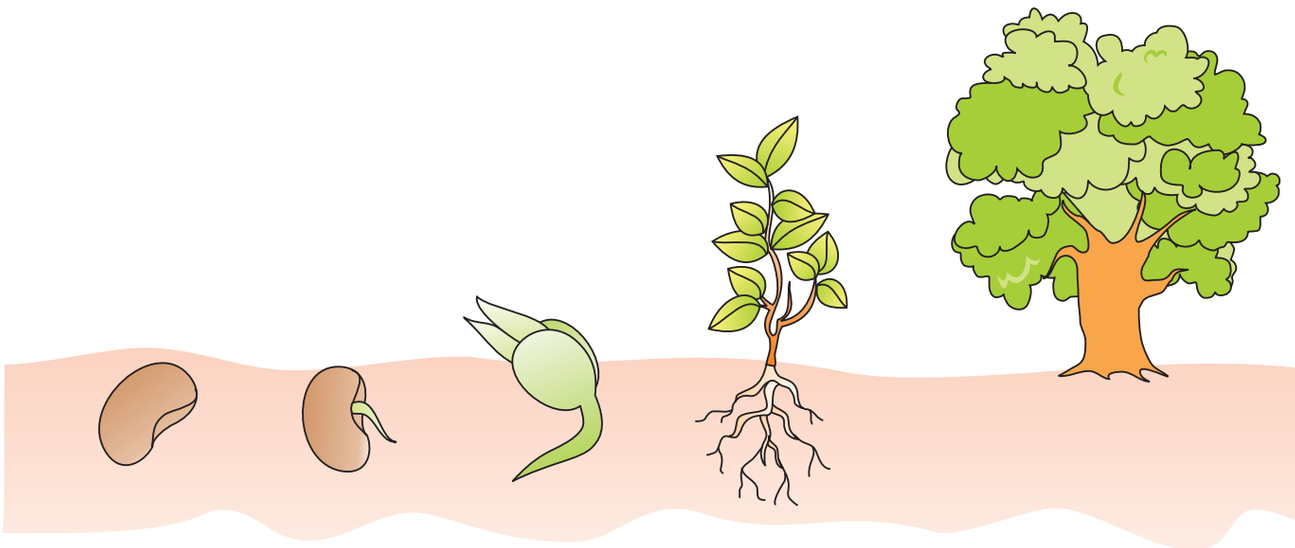
Structure of a Seed

Inside of a Seed

A seed looks inactive. But inside it, there is a tiny plant called the embryo and a store of food. If the seed is given water, air and warmth, it comes to life. The embryo begins to grow. This is called germination.



Inside of a Seed



Germination of Seed

The embryo consists of a root and a shoot. The embryo is attached to seed leaves (cotyledons). The embryo and cotyledons are enclosed in a tough seed coat (testa). There is a small hole in the seed coat called micropyle through which water enters the seed.

Seed Dispersal :

A plant produces large number of seeds. If all these seeds fall under the parent plant, the plants grown from them have to fight for their survival. So, seeds should spread to far off places from the parent plant to avoid over-crowding and the competition of light, water and nutrients. This scattering of seeds or fruits away from the mother plant is called seed dispersal.

Plants disperse their seeds. The fruits contain the seeds in different ways. The size, shape and colour of the fruit and seed determine the method of seed dispersal.

There are four ways by which seeds are dispersed :

1. Wind dispersal

Some seeds are wing-like in shape or they have tufts of hair or fibres on them. Being light in weight, they are carried away from one place to another by wind easily. Less weight and tufts of hair help in their flight. Cotton seed, dandelion seed and madder seed have tufts of hair around them. Hiptage, maple and sycamore seeds have wings attached to them.

Cotton Seed

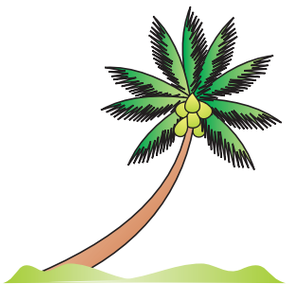
Madder Seed

Hiptage Seed

Maple Seed

2. Water dispersal

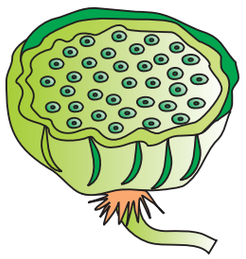
Water also helps in dispersal of seeds of plants living in water or nearby. Fruits such as coconut and lotus have some spongy or fibrous cover over them. When they come in contact of flowing water, they float away to far off places.



Coconut Tree

Coconut Seed

Lotus



Lotus Seed

3. Animal dispersal

Some plants produce fruits which are sweet, juicy and fleshy. Almost all animals including human beings and birds eat different types of fruits.

Dispersal by Animals

The animal eats the fruit, but only the juicy part is digested. The seed passes through the animal's digestive system and is excreted. This can happen far away from the parent plant. In this way, animals help in seed dispersal. Mango, berry, neem and apple seeds are dispersed in this way.

Some fruits and seeds such as xanthium seed, spear grass seed, tiger nail seed etc. have hooks or spikes by which they stick to our clothes or some animals which have hairy bodies. So, they get carried to long distances away from their mother plants.

Xanthium Seed

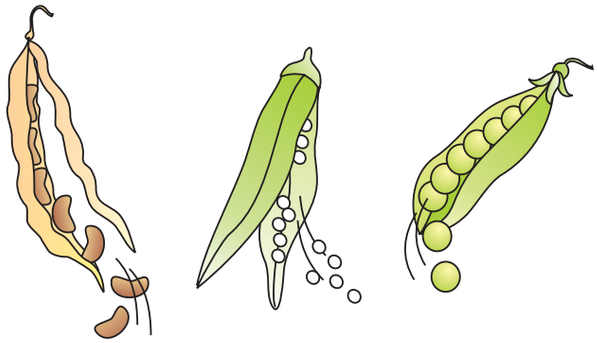
Spear Grass

Tiger Nail Seed

4. Dispersal by Explosion

Some fruits such as okra (lady's finger), pea etc. after drying throw away their seeds into the air.

Due to explosion, these seeds are thrown away to distant places and on getting suitable atmospheric conditions they grow into new plants.



Dispersal by Explosion

Do you know?

The scattering of seeds away from the mother plant is called dispersal of seeds.

New Plants from Spores

Plants that do not have flowers or seeds reproduce by tiny spores. Each spore can grow into a new plant. Examples of these are ferns, lichens and mosses.

Fern

Lichen

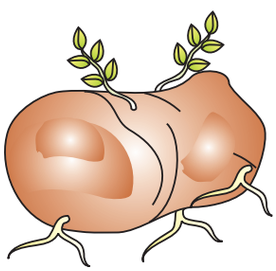
Moss

Reproduction by Plant Parts

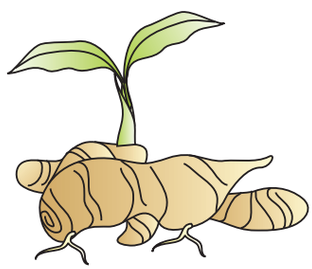
Some plants grow new plants from their body parts by different methods. Seedlings grow from different parts of the plant itself such as from bud, stem, leaf and root.

1. Bud

Potato and ginger plants grow from their underground stems. Stems of these plants are thick and fleshy because they contain food. These stems have buds also. When these stems are put into the soil, the new plants grow from the buds.



Potato



Ginger

Leaf of Bryophyllum

2. Leaf

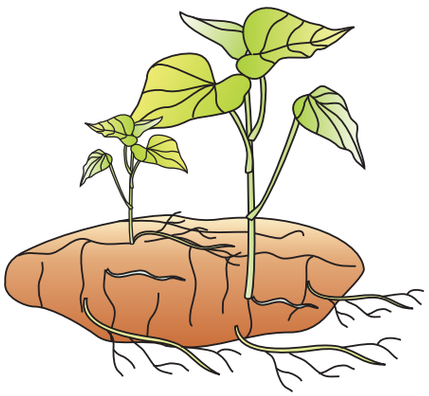
Leaves of plants such as bryophyllum produce buds on their margin. When leaves are detached or fall on the soil, the buds produce small new plants.

Do you know?

Victoria Amazonica has leaves which can grow one and a half metre across and are strong enough for a child to stand on.

3. Root

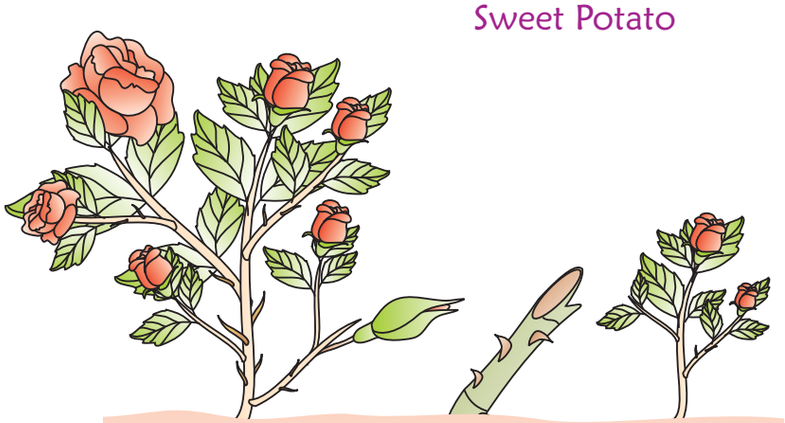
Plants of the sweet potato, carrot, beetroot grow from the roots. Sweet potato is a root which becomes thick due to the storage of food in it. If a piece of sweet potato is planted in a pot, a new sweet potato plant will arise.



Sweet Potato

4. Stem

Some plants like rose, hibiscus, bougainvillea and sugar cane have buds on their stems. Cuttings of the stems of such plants into small pieces are called stem-cuttings. If we plant a stem - cutting into the soil, after some days, we see that the stem cutting grows into a new plant.



New rose plant from stem - cutting

Key Ideas

- ★ *Flowers are important in making seeds.*
- ★ *A seed has a tiny plant called embryo.*
- ★ *Seeds germinate to give new plants.*
- ★ *A plant produces many seeds, but only a few germinate and most of them get destroyed.*
- ★ *Some new plants are produced by their vegetative parts such as roots, stems, buds and leaves.*

LET'S WRITE TOGETHER

A. Answer these questions :

1. What are the conditions necessary for the germination of seeds ?
2. If plants do not have seeds, how do they reproduce ?
3. Describe the structure of a seed.
4. What is meant by 'seed dispersal' ?
5. How do animals help in the dispersal of seeds ?
6. Explain the various ways of dispersal of seeds.

B. Complete the sentences :

1. _____ are important in making seeds.
2. Seeds need _____, _____ and warmth for germination.
3. The _____ consists of a root and a shoot.
4. A seed contains _____ inside it.
5. Dispersal of coconut seeds takes place by _____.

C. Name the way of reproduction for the following :

1. Potato _____
2. Rose _____
3. Sugar cane _____
4. Bryophyllum _____
5. Ginger _____
6. Sweet potato _____

D. Match the following :

1. Spear grass	[ ]	(A)	Water
2. Pea	[ ]	(B)	Explosion
3. Lotus	[ ]	(C)	Buds
4. Potato	[ ]	(D)	Animal body
5. Rose	[ ]	(E)	Leaf
6. Bryophyllum	[ ]	(F)	Stems

LET US DO

Draw the different stages of germination :

Fun Activity

A. Collect five pictures of pods that burst open on their own. Place each specimen in a small transparent pouch and pin the pouches.

B. Take an onion or ginger bulb and put it in the wet soil in an earthen pot. Keep watering it regularly for some days. Study its growth and write your observations here :

GLOSSARY

Reproduction	-	the act or process of producing babies, young animals or plants of their kind
Pollinate	-	to put pollen grains into a flower so that it produces seeds
Fertilize	-	to join pollen grains with ovum (egg) so that it produces seeds
Embryo	-	a young plant in the very early stages of development before coming out of its seed
Nutrient	-	a substance that is needed to keep a living thing alive and to help it grow
Spongy	-	soft and able to absorb water easily like a sponge
Parasite	-	a small animal or plant that lives on or inside another animal or plant and gets its food from it
Parent	-	a person's / plant's father or mother
Seed	-	the small hard part produced by a plant, from which a new plant can grow
Tuft	-	a small amount of hair, grass etc. growing or held closely together at the base
Atmospheric	-	related to the earth's atmosphere
Margin	-	the extreme edge or limit of a place
Moss	-	a very small green or yellow plant without flowers that spreads over damp surfaces, rocks, trees etc.