Chapter- 1

# Plants: Increasing the Numbers

## STUDY NOTES

***Let's learn***

**Importance of plants**

- Plants provide us different types of foods like cereals, pulses, vegetables, fruits etc.
- Plants provides us with wood fibre, rubber, gum, tea and coffee.
- Plants supply as with life giving oxygen.
- Many plants such as tulsi, aloe vera, etc. are used to prepare medicines.
- Plants absorb water through their roots and release water vapour from their leaves by a process called transpiration. Thus, they regulate the water cycle.
- Plants help reduce soil erosion.

Hence, we need to grow more and more plants, since we depend on them. More plants would mean a continuous supply of plant products to meet our needs.

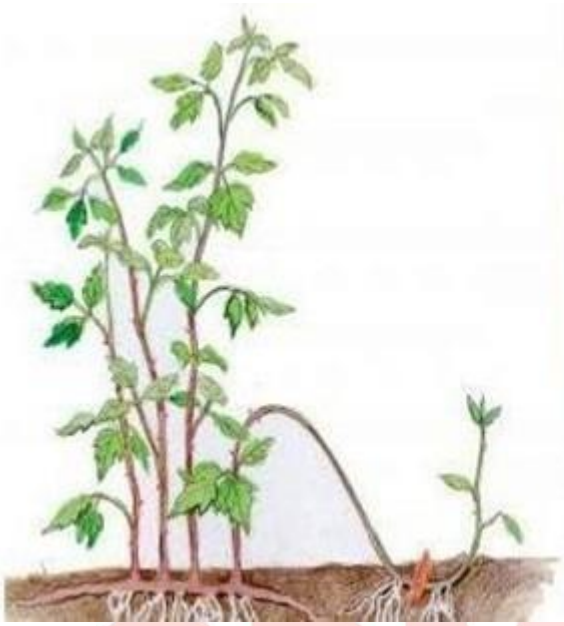
**New plants from seeds**

- A plant produces many seeds because most new plants grow from seeds.
- Seeds are usually found inside fruits.
- They are of different shapes and size.
- New plants grow when seeds fall on the soil and germinate

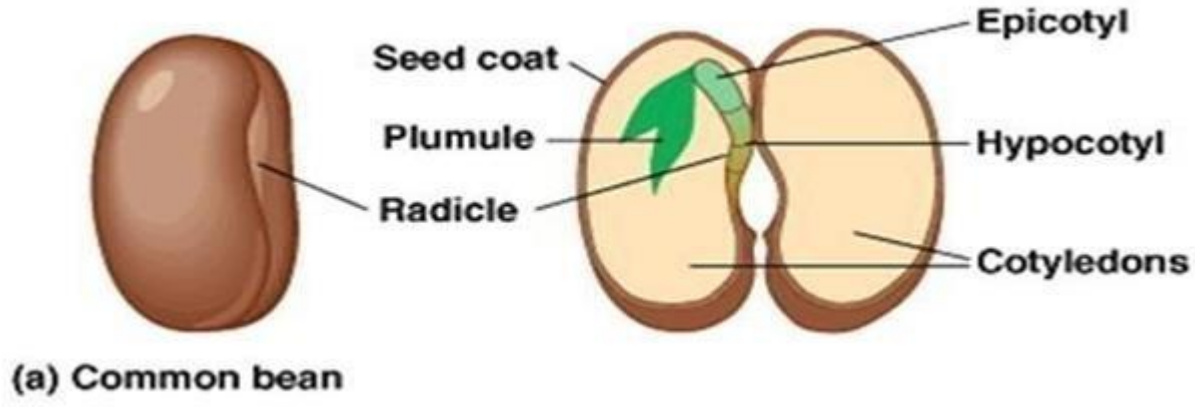
All seeds do not grow into new plants because of the following reasons:

- Some seeds are not fully grown when they separated from their parent plants.
- Some seeds are destroyed be strong winds and heavy rain or are eaten by insects are or birds.
- Some do not get the right soil are enough air and water.

Seeds that survive and get favourable conditions for their growth, grow into new plants.



**Structure of a seed**




**A seed has following parts:**

**Seed coat:** It is a thick outer covering that protects all seeds.

- **Cotyledons:** Just below the seed coat seed leaves are present.
- It protects the baby plant

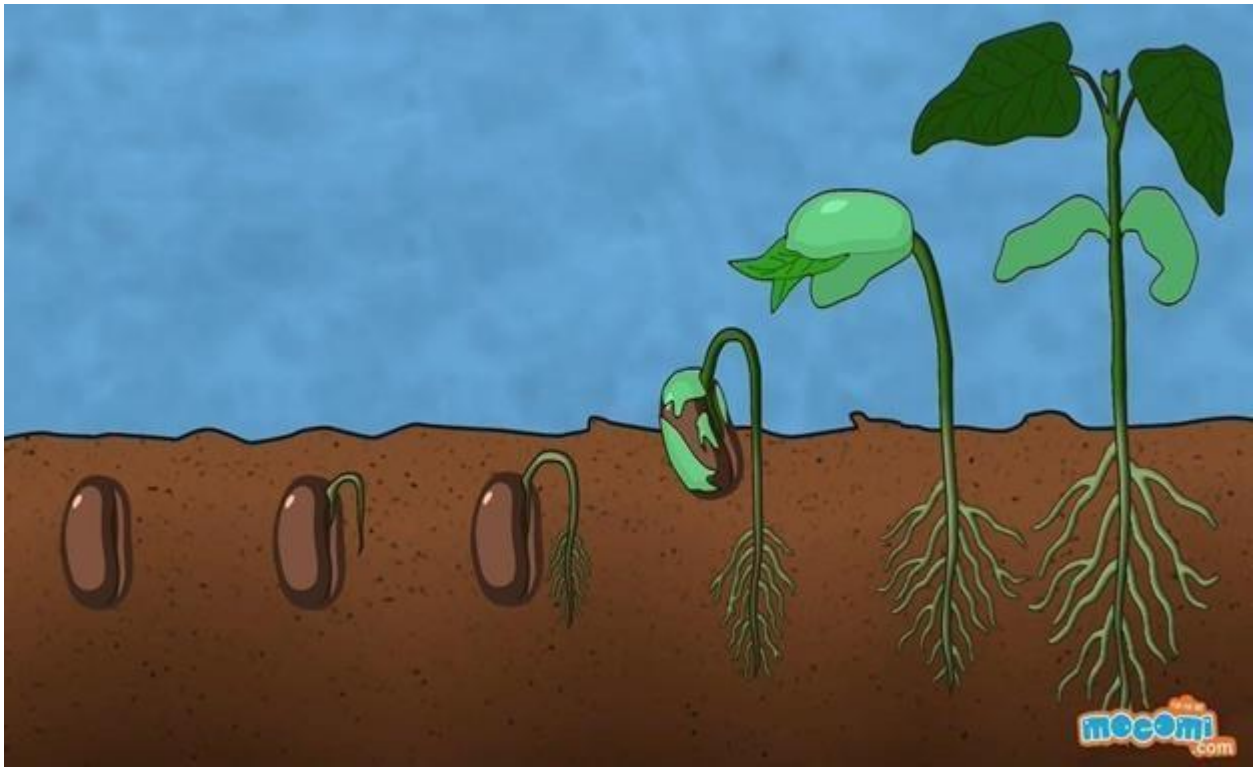
• They also store food for the baby plant

• **Monocot:** Plants having one seed leaf is called monocot plant

• **Dicot:** Plants having two cotyledons are called dicot

• **Embryo:** The baby plant present between the cotyledons is called the embryo. It has a small root or radicle and a shoot or plumule.

**Seed Germination**




The process by which a seed develops into a new plant is called germination.

The process of germination starts off, when the seed soaks in water.

• The seed first absorbs water and as a result swell up.

• Hours later, a small root tries to come out through a small hole.

• It brings out a tiny shoot

• The tiny shoot (plumule) grows upwards and the tiny root (radicle) grows downwards.

• The small plant with seed leaves called seedling.

• Seedling begins to prepare its own food with the appearance of the first foliage leaves

**Conditions for germination**

- Warmth: seeds need a suitable temperature for germination. the temperature should neither be more nor less. preferable range of temperature is 25 degree to 35 degree Celsius.
- Water: water is essential for germination. it makes the seed coat soft that helps the baby plant to break the seed open and come out.
- Air: Germinating seeds air to breathe.

**Stages in germination**

- **Seedling:** The embryo develops into a seedling having one or two cotyledons.
- **Sapling:** The seedling develops into a sapling after losing its cotyledons.
- **Plant**: The sapling develops into a plant.

**Dispersal of seeds**

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

**Different agents of seed dispersal**

**Wind Dispersal**

- Usually small and light seeds are scattered by wind. Example- grass.
- Some seeds are easily carried away by the wind due to the presence of long and fine hairs around them. Example- dandelion, cotton.
- Wings of some plants help them to float in air easily. Example- maple, drumsticks.

**Water Dispersal**

- Seeds of plants that grow in or near flowing water may be dispersed by water.
- These plants fruits and seeds can float on water because they trap air in them which makes them light and easy to float in water.
- Example water lily, lotus and coconut.

**Animal Dispersal**

- Human beings eat the fleshy fruits and throw the seeds away. In this way we help the plants to disperse their seeds. Example -mango, papaya, cherry and guava.
- Birds and animals' excreta out the seed in their waste and help in dispersal of seeds. Example-guavas and berries.
- Some seeds stick to the clothes or bodies of animals by their stiff hair, spines or hooks and help in dispersal. Example- Xanthium and martynia (tiger nail).

**Explosion of Fruit**

Some fruits burst open or explode when they are dry and scatter the seed away from the mother plant. Example-balsam, pea, geranium etc.

**New plants from other parts of plants**

• Most of the plants that we see around us reproduce through seeds.

• Some plants can reproduce from body parts such as leaves, stems and roots.

• Fern and mosses reproduce from tiny seed-like structures called spores



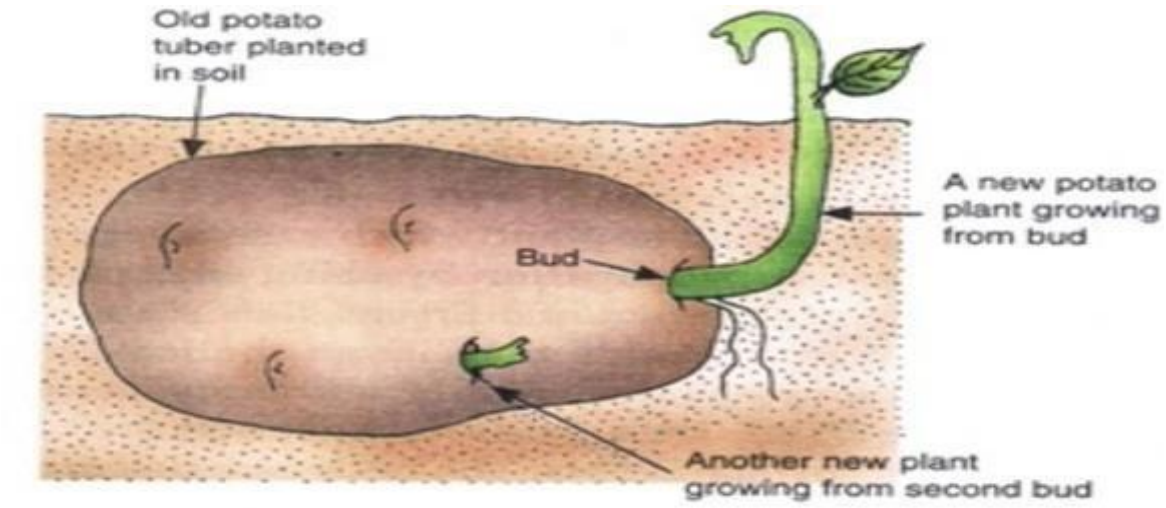
**Reproduction from stem**

• Some plants reproduce from their stem. Examples: potato, onion, ginger, etc

• Potato has several small buds on it.

• The eyes are called as buds.

• New plants grow from these buds.



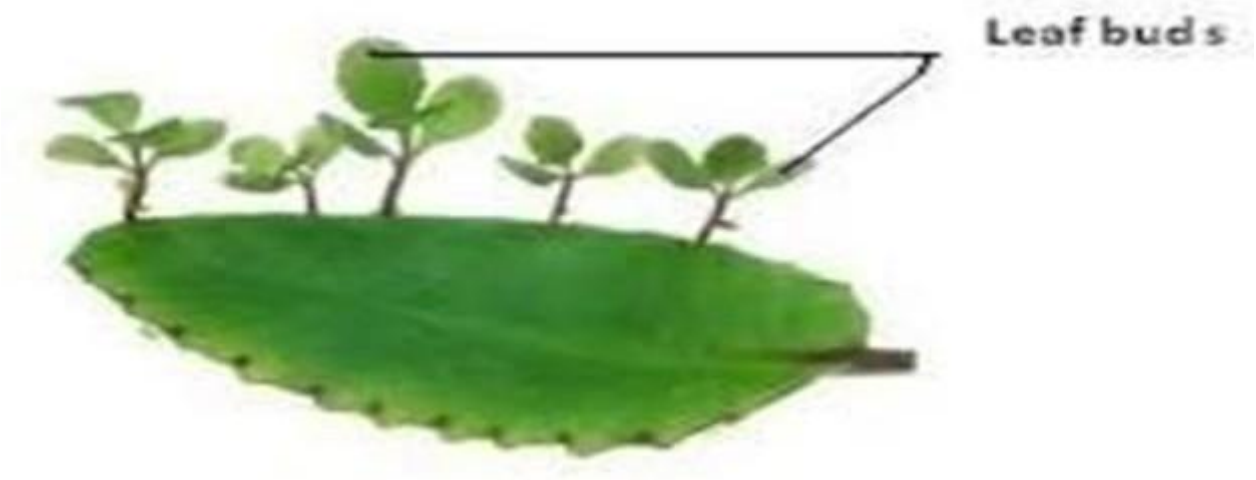

**Reproduction from leaves**

- Some leaves have buds along the edges

Example: Bryophyllum

- New plants grow from these buds.
- When the leaves drop down to the ground, the buds grow into adult plants.

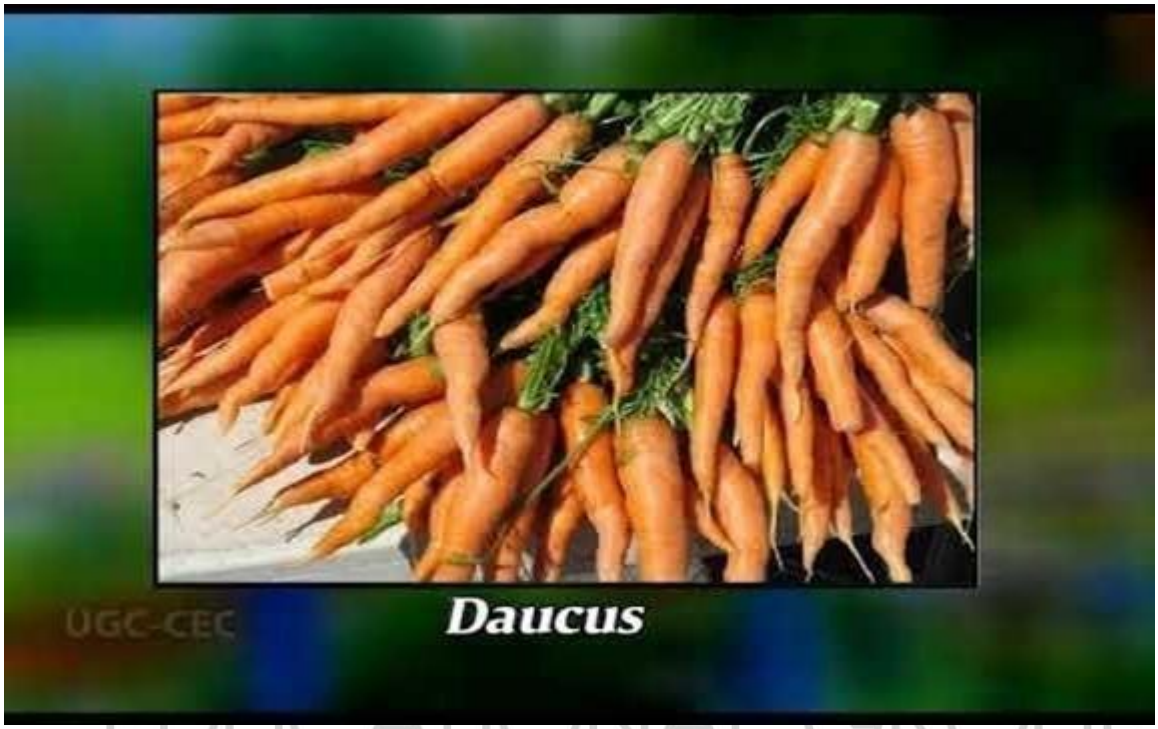




**Reproduction from roots**

•The roots of some plants produce new plants from their roots

Example: Sweet potato and carrot.




**Crops and vegetables**

Crops are plants that are grown in fields to provide food and other useful things to us. All crops need water, sunshine, air and good soil. Different crops grow well under different conditions. Crops are of following types.

**Types of crops**

**Summer Crops**

- These crops are called kharif crops.
- Example of kharif crops-rice, millets, maize, jowar, bajra, cotton, jute, hemp and peanuts etc.
- Example of kharif vegetables-onion, pumpkin, brinjal, garlic, tomato etc.
- Example of kharif fruits-mango, melon, litchi, plum etc.

**Winter Crops**

- Winter crops are called rabi crops.
- Example of rabi crops-wheat, barley, gram and mustard etc.
- Example of rabi vegetable-cauliflower, carrot, radish, turnip, peas and beans.
- Example of rabi fruits-apple, banana, pomegranate and berry etc.

**Different plants require different kinds of soil**

- Rice and jute grow in clayey soil which hold plenty of water.
- Wheat is grown in the sandy and irrigated soil of Punjab and Uttar Pradesh.
- Jawar and bajra are grown in the sandy soil of Rajasthan.
- Cotton grows well in the black soil of central and western India.
- Tea plants need moist soil and grow on the slopes of hilly areas like Assam, the Nilgiris and Darjeeling.
- Coconut trees grow in coastal areas like Kerala and Goa.
- Maize grows well in the dry soil of the plain or hills.
- Onion and groundnut need well-drained, sandy soil

**Agriculture**

The practice of growing plants on a large scale is called agriculture.

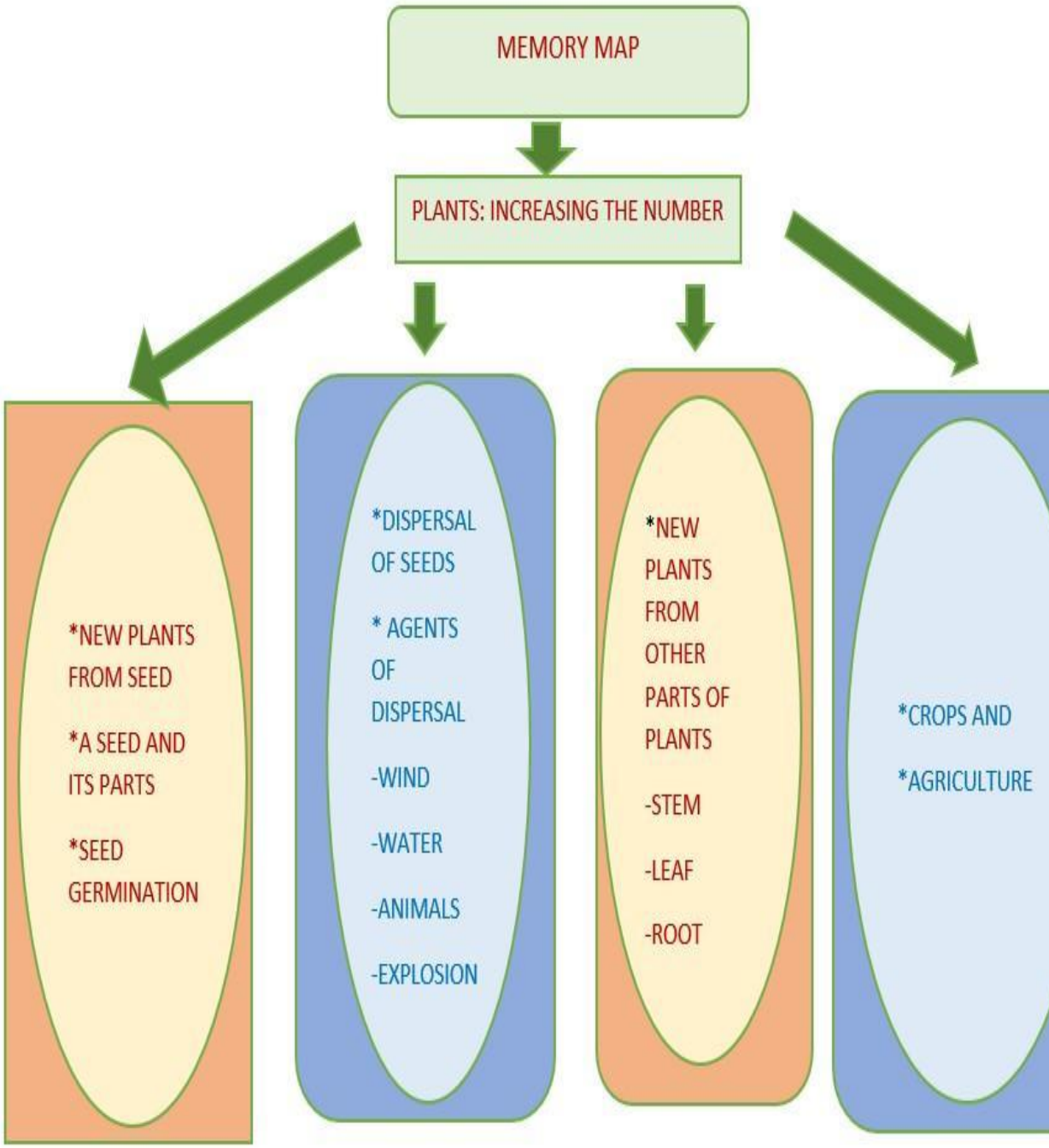
For a good and healthy crop, we must

- use healthy and ripe seeds for sowing.
- Prepare the soil properly.
- add manure or fertilizers to the soil.
- Irrigate the soil.
- Use insecticides and pesticides.

**Protection of crops and storage of seeds**

We need to protect our crops against

- Grazing animals like cows and goats,
- Pests such as locusts, grasshoppers and caterpillars and
- Diseases.


MEMORY MAP
PLANTS: INCREASING THE NUMBER
*NEW PLANTS FROM SEED
*A SEED AND ITS PARTS
*SEED GERMINATION
*DISPERSAL OF SEEDS
* AGENTS OF DISPERSAL
-WIND
-WATER
-ANIMALS
-EXPLOSION
*NEW PLANTS FROM OTHER PARTS OF PLANTS
-STEM
-LEAF
-ROOT
*CROPS AND
*AGRICULTURE

***Let's Know More***

- If you plant the stem a mango tree in the ground, will it grow into a new plant? Why, or why not?
- Bajara is mostly grown in the state of Rajasthan. Can you say why?

***Let's Do***

**A. Tick the correct answer.**

1. A seed with two seed leaves is called a
a. Damaged seed.
b. Monocot.
c. Soaked seed.
d. Dicot seed.
2. Right soil, warmth, enough air and water are necessary conditions for the growth of
a. Children.
b. Birds.
c. Seeds.
d. Books.
3. New plants can grow from the leaves of
a. Ginger.
b. Bryophyllum.
c. Onion.
d. Sweet potato
4. Which feature helps a coconut fruit to float in water?
a. A fibrous outer covering
b. A spongy part
c. Presence of hook
d. Presence of spine
5. Plants that need clayey soil to grow well are
a. Wheat and gram.
b. Rice and jute.
c. Jawar and bajra.
d. Tea and coffee.

6. Insecticides and pesticides protect crops from being destroyed by

a. Drought

b. Excessive rain.

c. Pests.

d. Elephants.

**B. Fill in the blanks.**

1. Maize has_____seed leaf/leaves.
2. Any part of a potato that has_____on it can grow into a new plant.
3. In India, crops like wheat and gram are grown from November to April, and are called _____crops.
4. Onion and_____need well-drained, sandy soil.
5. Plants help to reduce soil_____.

C. Complete the series.

1. Mango : seed : :_____: root
2. Hiptage : wind : :_____: explosion
3. Cabbage : winter : :_____: summer
4. Rice: clayey soil: :_____: black soil
5. Maize : dry soil : :_____: sandy soil

D. If you are a gardener, which part of a plant would you plant to grow a new

1. Rice plant? _____
2. Rose plant? _____
3. Ginger plant? _____
4. Onion plant? _____
5. Sweet potato plant? _____
6. Bryophyllum plant? _____



***Understand and Answer***

**E. Write short answers.**

1. Name the outer covering of a seed.
2. What is a monocot seed?
3. What is germination?
4. What is meant by dispersal of seeds?
5. What are kharif crops?
6. Why do we spray pesticides on crops?

**F. Answer these questions.**

1. How are plants useful to us?
2. Name the different parts of a seed. Draw a diagram and label the parts.
3. Name the condition necessary for germination.
4. Why must seeds be dispersed? What are the different agents of dispersal?
5. What is agriculture?

***Teacher's Note***

- Germinate different types of seeds and observe the different stages of germination.
- Grow 3 different types of vegetative parts to make new plants.

***Improve Your GKs***

- Amla contains vitamin C and is thus useful in healing wounds.
- Jackfruit contains many vitamins and minerals. it is good for the formation of blood and to have –healthy skin.

***ANSWER KEY***

***Let's Know More***

- No, a mango tree grows only from a seed. Hence it will not grow from a mango stem.
- Bajra requires less water and grows well in sandy soil. Rajasthan receives little rainfall and is desert, hence bajara grows well here.

***Let's Do***

**A.**

1. d
2. c
3. b
4. a
5. b
6. c

**B.**

1. one
2. eye
3. rabi
4. groundnut
5. Erosion

**C.**

1. carrot/sweet potato
2. peas
3. pumpkin/brinjal
4. cotton
5. Onion

**D.**

1. Seed
2. Stem
3. Stem
4. Stem
5. Root
6. Leaf



***Understand and Answer***

**E.**

1. Seed coat is the outer covering of a seed.
2. A seed that has only one cotyledon after germination is called a monocot seed.
3. The process of development of a seed into a seedling is called germination.
4. Scattering of seeds away from the parent plants to another place is called seed dispersal.
5. Crops that are grown from June to October are called Kharif crops or monsoon crops.
6. We spray pesticides on crops to protect the crop s from being destroyed by the pests.

**F.**

1. Plants are useful to us for the following reasons:

- Plants provide us different types of foods like cereals, pulses, vegetables, fruits etc.
- Plants provides us with wood fibre, rubber, gum, tea and coffee.
- Plants supply as with life giving oxygen.
- Many plants search tulsi, aloe vera, etc. are used to prepare medicines.
- Plants absorb water through their roots and release water vapour from their leaves by a process called transpiration. Thus, they regulate the water cycle.
- Plants help reduce soil erosion.

2. Different parts of a seed.

**Seed coat:** It is a thick outer covering that protects all seeds.

**Cotyledons:** Just below the seed coat seed leaves are present.

• It protects the baby plant

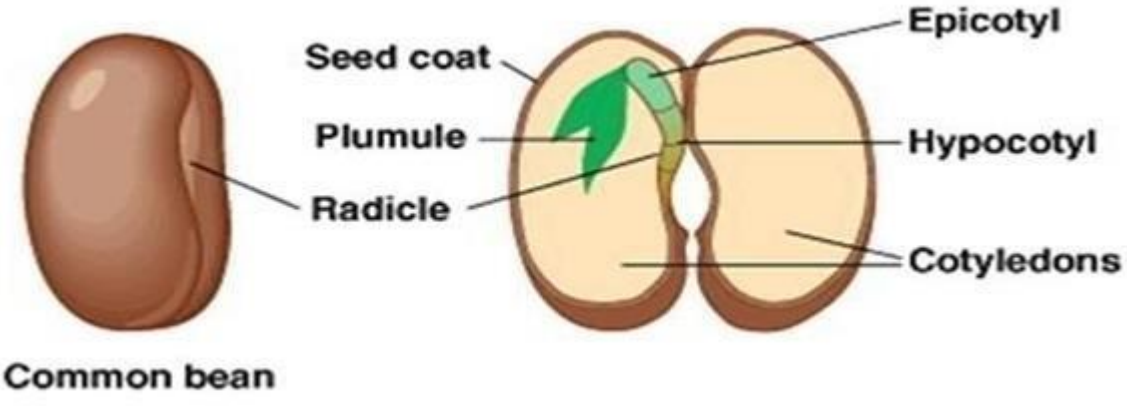
• They also store food for the baby plant

**Monocot:** Plants having one seed leaf is called monocot plant

**Dicot:** Plants having two cotyledons are called dicot

**Embryo:**

• The baby plant present between the cotyledons is called the embryo. It has a small root or radicle and a shoot or plumule.




(a) Common bean

3.

Conditions necessary for germination.

- Warmth: Seeds need a suitable temperature for germination. The temperature should neither be more nor less. Preferable range of temperature is 25 degree to 35 degree Celsius.
- Water: Water is essential for germination. It makes the seed coat soft that helps the baby plant to break the seed open and come out.
- Air: Germinating seeds air to breathe.

4.

If plants grow too close to each other, they will not get enough space, air, water, minerals and sunlight. Under these conditions, they will not grow into healthy plants. To reduce such crowding, seeds must be dispersed.

Agents of dispersal:

- Wind
- Water
- Animals
- Explosion

5.

The practice of growing plants on a large scale is called agriculture.