

13. SEED DISPERSAL



In the previous chapter “Reproduction in Plants” you have learnt about the parts of the flower. Do you know which part of the flower turns into fruit? What does the fruit contain? You have also seen the section on the Ovary. What develops from the Ovule? You know that after fertilization ovary develops as fruit and ovules develop into seeds. When the seeds germinate they give birth to new plants.

You may have observed some fruits or vegetables growing in a garden or your back yard. Some fruits may be seen growing singly while some are in bunches. Some of them contain one seed, whereas some others contain many seeds.



One day Ravali saw that a tomato plant was growing on the roof top. No one can sow seeds on the house top. How did they reach there?

How did they grow into plants? She was surprised. We often see plants that grow on cracked walls and on stones. How do seeds reach there?

Generally we sow seeds in our house gardens and in fields, but different kinds of plants grow in our surroundings. Who sows these seeds? How do seeds travel from one place to another? Ravali has so many doubts.

Why are seeds dispersed?

Most of the seeds fall in the soil and get buried in the ground. After some time they germinate and grow into small plants.

What will happen if all the seeds fall in the same place and germinate producing plants?

Will they have sufficient place to grow?

Will they get sufficient sun light and water?

Can they survive in the absence of light and water?

When we discuss these questions we will know that seed dispersal is necessary to grow tiny plants of the same species. To avoid competition with the mother plant for air, water and minerals plants disperse their seeds to different distances. But the process of dispersal varies from plant to plant. Plants have special mechanism for seed dispersal. Do seeds travel to find suitable places to germinate? Do the dispersed seeds have any special characteristics? Does the travelling mechanism affect seed dispersal? Let us study these aspects..

How are seeds dispersed?

Do you know the factors that affect seed dispersal? Are the characteristics of seeds decided on the way they are dispersed? Let us find out.

Let us do - 2: Observe different seeds

S.No.	Name of the Seed	Nature of Seed					
		Light	Heavy	Round	Flat	Hairy	Thorny
1	Bhendi	☐	☐				

Fibrous

Collect some seeds like grass, poppy, bhendi, coconut etc. Try to collect different types of seeds like seeds with hair, thorns, big, small, light, heavy etc., and record the information in the above table.

- Which seeds can be carried by air?
- Name the seeds that are round and heavy?
- Which seeds can float on water?
- Which seeds contain hooks/horns? Why?
- Are the hairy seeds light and flat? Why?
- How are fibrous seeds? Are they light or heavy?
- Are there Tadi seeds in your list? Which characteristics do you find in them?

There are different seeds with different structures which are useful for their dispersal.

Do you know how these seeds are dispersed from one place to another?

Different agents of the seed dispersal

1. Dispersal through wind

Have you seen white hairy balls or parachute like structure moving in air? Children try to catch them. Have you ever tried to do so too? They are the seeds of caltropis. These seeds have light and hairy structure at one end. They travel with wind and settle at a suitable place to germinate. Seeds that are dispersed through air are usually light and are either very small or are light with wings on them or some hairy structures on them. The seeds get adapted in such a way that they get carried away easily by wind. Some seeds float in air, some propel to travel short distances.



Milkweed

Dandelion

Maple

Fig. 3

In some plants like orchids seeds are minute with inflated covering. In plants like maple, seeds have wing like outgrowths. Cotton seeds have hairy structures. These types of specialized structures, present in the seeds, will be helpful for dispersal by air.

Try to find out names of seeds which float in air in your surroundings and make a list.

2. Dispersal by water



Fig. 4

How do seeds float on water?

The seeds adapted to float on water are usually light. The outer covering of the seed has empty spaces filled with air and some are fibrous with air spaces that encloses the whole seed or fruit. Eg: Coconut. The entire Coconut fruit floats on water and moves from one place to another. When it reaches the ground it germinates. That's why we usually find coconut trees growing near sea shores. Seeds that are heavy usually fall to the bottom of water sources and get carried by the flow of water. Ex: Seeds of Lotus.

Give examples of some other plants whose seeds are dispersed by water? (Hint: Think about water plants)

3. Dispersal of seeds by birds and other animals

Discuss with your friends and list out the seeds which are dispersed by birds and animals.

Seeds are dispersed by animals in many ways. In case of fleshy fruits, the fruit is eaten by animals while

some dry fruits, with specialized structures like hooks, thorns, hairy parts, get stuck to the bodies of animals and get carried to distant places. We find such seeds in some kind of grass plants.

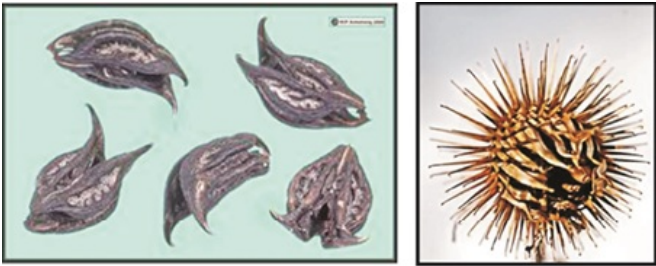


fig.5

Did you notice some kinds of fruits or seeds getting stuck to your clothes when you walk through fields and bushes? They have hooks or thorns on them. Find out which fruits or seeds these are?

Some seeds are sticky and get stuck to the beaks of birds and in course of flight they fall down at distant places. Often some birds carry seeds with their beaks. Some of them fall before they reach their nesting places.

Do you know some seeds have to pass through the guts of some birds before they germinate?



Birds like Bulbuls, Mynahs, Crows eat some fruits (Eg: Neem fruit) the outer fleshy part gets digested in the food canal and the seed coats of them become tender.They are then dispersed to other places as bird droppings.

Many fleshy fruits are meant to be eaten by animals. The fleshy part of the fruit is eaten leaving the seeds uninjured. Some seeds get dispersed through animal excretions

The forgetful squirrel.

It collects a lot of nuts and hides them underground before onset of winter. It can hardly eat all of them and even forget where it has hidden its nuts! Thus we have several nut trees at different places.



Let us do:

Observe the animals in your surroundings. Fill in the following table.

S.No.	Name of the Animal	Fruits eaten / Seed dispersed
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4. Dispersal by bursting of fruits that throw the seed out:

Many fruits enclose the seed in a capsule or pod. Upon drying the pod explodes releasing the seeds with great force in the surroundings. We find such type of seeds in Bhendi, Mustard and seeds of Pea family. Some seeds grow in capsules which when touched burst and uncoil with a force in such a way that they scatter the seeds all around.



The seeds of Balsam are dispersed in this manner. You may have also noticed that some fruits explode when we sprinkle water on them and the seeds get dispersed.

Try to list out such types of seeds that you see in your surroundings

Let us do: Observation of scattering of the seeds

Collect fruits of Kankambaram from your or your friends houses, sprinkle water on them. Write your observations. Collect some dry pods of pea, gingelly (Til), bhendi from a nearby field or from a shop and try to open them. What happens to the seeds in the pod? How far are they scattered? Note the distance.

- In which weather conditions do seeds scatter?
- Do you think that these seeds would scatter in this way during rainy season?

5. Dispersal of seeds through human beings

Generally we sow seeds of flowers, fruits and vegetables in our home garden . Everyone is aware of Tomatoes. It is a common vegetable cooked in every home. In tomato pickles, tomato curry etc. we find Tomatoes. Do you know from where this fruit has come from and that it is not native to India? When European travellers came to trade in India, they left the seeds of vegetables like tomato, cauliflower, guava, pear on their return. Similarly sugar cane which is native to India and is used worldwide for production of sugar, is a good example of how people transfer seeds/fruits from one place to another.

Now-a-days we see different kinds of fruits and vegetables around us. Import and export of grains like wheat pulses, maize, paddy is a common practice through which many seeds get dispersed all over the world. It is funny to think that seeds also travel by aeroplanes and ships!

Let us do:

Form group of four or five students and try to collect information about other seeds dispersed by man.

Why plants produced a large number of seeds:

You observed that fruits and vegetable plants that grow in our home garden produce a large number of seeds. Some fruits grow in singly whereas some are in bunches. Some fruits have a single seed in them and some have a large number of seeds.

Let us do: Seeds in fruits

Collect different kinds of fruit which are available in your surroundings. Open them and count how many seeds they have. Try to collect information about seeds and enrich the following table.

S.No.	Name of the Fruit	Number of Seeds
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- Which fruits have a large number of seeds?
- Which fruits have a single seed?
- Do all the seeds germinate to grow into plants?

All the seeds of a fruit should be able to germinate to produce new plants. Actually this does not happen. If this happens we will see only same type of plants in large number in our surroundings. All seeds don't germinate. Some seeds never germinate to produce new plants. Some seeds germinate but plants die before maturation. To overcome these problems plants produce a large number of seeds.

Do you know:

A mustard plant produces more than 10,000 seeds in its lifetime. If all the seeds germinate to grow into adult plants, think how many seeds would be produced. If this happens for a period of six years the entire globe will be covered with mustard plants!



What we have learnt:

- Seeds are carried from one place to another so that they get suitable conditions to grow, this is called dispersal of seeds.
- Seed dispersal is essential for survival of plants.
- Seeds of different shapes, sizes and structures on them help in dispersal.
- Seeds are dispersed by wind, water, birds and animals.

Key words:

Dispersal, Bursting Mechanism, Fleshy Fruit

Improve Your learning :

1. What happens if seeds are not dispersed?
2. How are the seeds dispersed in caltropis?
3. Why do most of the coconut trees grow along the sea shores?
4. Do you find any relationship between the weight of the seeds and the dispersal mechanism? Discuss with suitable examples.
5. Ravali said “dispersal of seed is very important in nature” Is she correct? Why do you support her?
6. Collect the information in the following table and discuss the reasons?

Agents of dispersal	Name of the seed / Fruit
By wind	
By water	
By animal	
By bird	
By man	
By any other	

7. Some seeds like soap nuts have very hard shell. Why it is so?
8. Now- a-days people want to eat sprouts. List out the reasons why they take sprouts as food?
9. Collect some seeds sow them in a particular place in your school garden. Observe how many days each type of seed takes to germinate. Tabulate your observations.
10. Collect Tadi seeds and make a model. Display them in your School.