

## Strategies for seed dispersal:

In plants after the process of fertilization, seed production can begin. Seeds when ripe will disperse from the parent plant to start the next generation.

There are various seed adaptations which help this to happen.

Seeds can be dispersed in a number of different ways. They may be carried by the wind, water, or animals. Some plants even shoot the seeds out explosively.

### Seed dispersal by wind:

Seeds carried by wind have a parachute of hairs or wing-like extensions to help them drift in the wind. These plants have evolved seeds that use wind power to transport them from one place to another.

- ✚ Seeds that are dispersed by the wind are usually lighter and smaller than other seeds. This makes it easy for the wind to carry them.



- ✚ They have special structures that catch the air, such as wings or fluff. These structures increase the seed's hang time in the air and allow them to travel extremely far distances. Winged seeds, such as

those produced by maples, may travel 180 meters or so; while some seeds, like those of a dandelion, can travel over 500 miles.

- ✚ Seeds are produced in large numbers. Because seeds carried by the wind are taken wherever the wind blows. So, producing large numbers of seeds helps maximize the probability that some will reach suitable sites.
- ✚ But, most of such seeds won't find a suitable place to live and will die. In order to be smaller and lighter, these seeds have smaller endosperm. As such, they have fewer nutrients to live on and many will never become established.

#### **Seed dispersal by water:**



Many plants have seeds that use water as a means of dispersal. The seeds float away from the parent plant.

- ✚ Plants which grow beside or in water often use water to disperse their seeds. These seeds are waterproof and can have fluff or other structures to increase their buoyancy.
- ✚ For example, Mangrove trees live in estuaries. If a mangrove seed falls during low tide, it can begin to root in the soil. If the seeds fall in the water, they are carried away by the tide to grow somewhere else.

- ✚ The famous example for this is the iconic coconut. In the special case of coconuts, their waterproof wooden casings allow them to be transported extremely long distances in saltwater.
- ✚ These thick floating fruits are impermeable to water and are filled with nutrients to keep the embryo alive for months at sea.
- ✚ Several freshwater plants including seeds of lotus wait for the favorable conditions that allow them to sprout.



### Seed dispersal by animals:

Another strategy for seed dispersal is to use animals to carry seeds to suitable locations. There are several methods plants use to get animals to carry their seeds.

#### 1. Making their seeds food:

a. Seeds are embedded in fruits. Fruits have bright colors and nutrient-rich flesh that attract animals like birds and mammals to eat them. The animals then disperse the seeds when they defecate or spit them out.

For example, the seeds of blackberries require digestion by birds in order to sprout. They must enter the bird's gizzard in order to break the dormancy by the stomach acids and digestive enzymes. They serve to make the seeds more permeable to water.

b. The seed itself can also become an attractive food item for an animal that likes to cash food for the winter.

Ex: squirrels - acorns.

Squirrels famously misplace their collection of acorns, which then have an excellent chance of germinating. Even half-eaten acorns can still sprout if the embryo inside is undamaged. Hence, squirrels disperse more seeds than those in their forgotten stores.



Any seed the animal forgets has the opportunity to germinate into a new plant. Seeds that attract animals by being a food source are often relatively large and heavy. Plants usually do not produce these large seeds in large numbers because each one is relatively energetically expensive to produce.



2. **Seeds as hitchhikers:** Seeds can also take advantage of animals by becoming hitchhikers. Seeds can develop special structures such as burs or hooks that allow them to get tangled in an animal's feathers or fur and be carried to new locations. While seeds using this strategy can be produced in large numbers, they will never disperse unless an animal comes in contact with the plant.

**Seed dispersal by fire:**

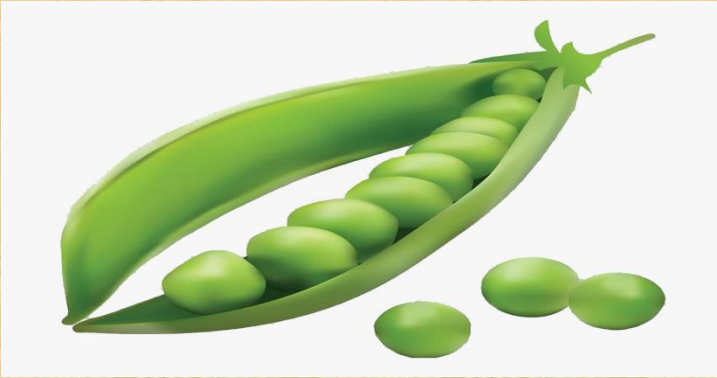
Fire dispersal is fundamentally different than other types of dispersal. Fire destroys the living plant material in any area making those sites perfect for new seeds to grow. Therefore, fire dispersed seeds do not have to worry about moving to a new location; they just have to be ready to sprout right after a fire.



**Seed dispersal by explosion:**

Some seeds literally use an explosion to disperse their seeds. Certain plants utilize explosive force to shoot their seeds out. The seeds of these dispersers like peas and flax reside in pods, and as the pod dries out once the seeds are ripe. When dry, it will eventually burst expelling and scattering the seeds in every direction.

An example of this type of dispersal is witch hazel; its seeds are held in tiny wooden capsules and can shoot several feet away when the pod bursts.



**Activity:**

Collect a dry pod of a pea from any shop and try to open those dry pods. What will happen? You can see the scattering of the seeds far away. This is the best example to understand the seed dispersal by the explosion.

**Seed dispersion by human activities:**

Humans are the best seed dispersers that have ever existed, dispersing plant species all over the world.

Nowadays 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.



These are the different strategies followed for seed dispersal and we might get a doubt here. Which strategy is the best one among these?

No strategy is the best here. Each has evolved in a certain environment and adapted to their own suitable conditions.

