Seed Dispersal

What is Seed Dispersal?

Seed dispersal is the movement or transport of seeds away from the parent plant.

Plants disperse seeds through various methods to increase their chances of survival and growth.

Need for Seed Dispersal

i. Reduces Competition:

If seeds fall close to the parent plant, they might compete for sunlight, water, and nutrients.

Dispersing seeds ensures that the new plants grow in different locations and have access to sufficient resources.

ii. Prevents Overcrowding:

Helps prevent overcrowding near the parent plant.

More space promotes healthy growth of new saplings.

iii. Colonization of New Areas:

Dispersal helps plants spread to new geographical regions.

This increases their chances of survival and adaptation.

iv. Genetic Diversity:

Spreading seeds to new areas encourages cross-pollination.

This leads to genetic diversity and stronger plant populations.

Methods of Seed Dispersal

i. Dispersal by Wind (Anemochory)

Wind-dispersed seeds are usually:

Small and lightweight \rightarrow Can be easily carried by the wind.

Have feathery bristles, wings, or parachute-like structures to stay afloat.

Examples:

Dandelion:

• The seeds have fluffy bristles that help them float in the air.

Cottonwool tree:

• The seeds are light and feathery, allowing them to travel long distances.

Maple tree:

• The seeds have wing-like structures that flutter and spiral down slowly.

Kauri tree:

• Produces winged seeds that glide through the air.

Key Features of Wind-Dispersed Seeds:

Lightweight to be carried easily.

Produced in large numbers to increase the chances of successful dispersal.

ii. Dispersal by Water (Hydrochory)

Water-dispersed seeds are usually:

Buoyant and waterproof \rightarrow Float on water.

Have fibrous or spongy outer coats that keep them afloat.

Examples:

i. Lotus:

• The seeds float on water and germinate on nearby land.

ii. Coconut:

- The seed is enclosed in a fibrous, waterproof casing.
- It can travel long distances in saltwater before reaching a shore.

iii. Mangroves:

- Their propagules (seedlings) float and drift with the tide until they settle in mud.
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- Buoyant and waterproof covering.
- Can travel long distances before germinating.

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iii. Dispersal by Animals (Zoochory)

Animal-dispersed seeds are usually:

Fleshy and colorful \rightarrow Attract animals and birds.

Edible with hard, indigestible seeds \rightarrow Seeds are excreted after digestion.

Some have hooks or spines that stick to animal fur or feathers.

Examples:

i. Birds and mammals:

Eat fruits like berries and cherries.

The seeds are dispersed through defecation or spitting.

ii. Squirrels and monkeys:

Eat fruits and drop the seeds while moving.

iii. Burdock and Xanthium:

Seeds have hooks or barbs that cling to animal fur and are carried to new locations.

iv. Humans:

Transport seeds while eating fruits or through agricultural activities.

Key Features of Animal-Dispersed Seeds:

Brightly colored and fleshy to attract animals.

Hooks, barbs, or sticky coatings to attach to fur.

Hard seed coats to resist digestion.

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iv. Dispersal by Explosion (Ballochory)

Some plants use a mechanical explosion to disperse seeds.

The seed pods dry out in the sun, creating internal pressure.

When the pressure becomes too high, the pod bursts open, flinging the seeds away.

Examples:

i. Pea pods:

When the pod dries, it explodes and scatters the seeds.

ii. Lady's finger (Okra):

The pod bursts open, dispersing the seeds forcefully.

iii. Touch-me-not (Mimosa pudica):

When touched, the pod explodes and scatters the seeds.

Key Features of Explosion-Dispersed Seeds:

High internal pressure in seed pods.

Seeds are scattered forcefully away from the plant.

v. Dispersal by Gravity (Barochory)

Some seeds are dispersed simply by falling from the plant.

The heavier seeds drop close to the parent plant.

Examples:

i. Apple and pear:

Fruits fall under the force of gravity.

The seeds are exposed when the fruit rots.

ii. Walnut and chestnut:

Heavy seeds drop to the ground and roll away.

Key Features of Gravity-Dispersed Seeds:

Heavy and large seeds.

Fall close to the parent plant.

Interesting Fact: The Largest Seed in the Plant Kingdom

The coco-de-mer palm, native to the Seychelles Archipelago in the Indian Ocean, produces the largest seed.

The seed weighs up to 18 kg and is dispersed by water.

It can float across the ocean for long distances before settling on new land.

Importance of Seed Dispersal

i. Increases Survival Rate:

Seeds are spread over a wide area, reducing competition and increasing survival chances.

ii. Promotes Genetic Diversity:

Dispersal encourages cross-pollination, leading to genetically diverse populations.

iii. Colonizes New Areas:

Allows plants to spread to new habitats and adapt to different environments.

iv. Prevents Overcrowding:

Reduces competition by spreading seeds away from the parent plant.

v. Ensures Species Continuation:

Seed dispersal ensures new generations of plants, preventing extinction.

Key Takeaways

Seed dispersal is the process of transporting seeds away from the parent plant.

It prevents competition, overcrowding, and promotes genetic diversity.

Methods of dispersal:

- Wind: Light, feathery seeds (dandelion, cotton).
- Water: Buoyant, waterproof seeds (coconut, lotus).
- Animals: Edible fruits with hard seeds or hooked seeds (berries, burdock).
- Explosion: Pods burst, scattering seeds (pea, okra).
- **Gravity:** Heavy seeds drop near the parent plant (apple, walnut).

Seed dispersal plays a crucial role in plant reproduction, survival, and biodiversity.