

Lecture: 7

***Fruit and Seed dispersal:

The dispersal unit, or diaspora, of a plant (seeds and/or fruits, including accessory parts) often exhibits specific adaptations for dispersal from the parent plant, giving it a selective advantage. These includes:

1- Anemochory: dispersal by wind as in dandelion fruits.

2- Autochory: self- dispersal as in *Arachis*.

3- Hydrochory: dispersal by water as in coconuts.

4- Myrmeco-chory: dispersal by ants.

5- Zoochory: general dispersal by animals, here there are two ways:

A- Exozoic: In which the fruit or seed become attached to and carried away by an animal .

B- endozoic: In which the fruit or seed is eaten and passes out via the animals feces unharmed.

*****Plant reproduction:** Is the study of the mechanisms and processes of sexual and asexual reproduction in plants.

Sexual reproduction in seeded plants:

There are two major processes in sexual reproduction of seeded plants:

A/Pollination :- It is the transfer of pollen grains from microsporangia to the ovule or stigma. **There are two types** of pollination

1- Self-pollination: It is the transfer of pollen from the stamens to the stigma in the same flower. This type of pollination happened in the following:

A- Hermaphrodite flowers

B- Cleistogamous flowers as in *Avena*

2- Cross-pollination: It is the transfer of pollen from the stamens of one flower to the stigma of a different flower. This type has the most distinct advantage of providing more genetic variation.

*****Mechanisms favouring cross-pollination:**

1- Being dioecious (that is having separate male and female plants as in *Salix*).

2- Being monoecious (that is having separate male and female flowers as in hazel).

3- The maturation of anthers and stigmas in different times. If the anthers mature first is called **protandry** as in *Bunium*, if the stigmas mature first called **protogyny**.

4- In **heterostyled flowers**.

5- In **self-incompatible flowers**.

B/Fertilization :- It is the union of sperm and egg. Pollination usually followed by fertilization. There are different types of F.

1- Inbreeding (also called selfing):

Is the union of gametes derived from a single individual. In flowering plants, inbreeding may occur either within a single flower or between flowers derived from one individual.

2- Outbreeding(also called outcrossing or allogamy):

Is the transfer of gametes from one individual to another, genetically different individual. The general advantage of outbreeding is to promote an increase in phenotypic variability within a pollination.

This generally enables plants to adapt to a wider range of environmental conditions.

3- Allautogamy(means have both outcrossing and selfing flowers): As in *Viola*, have two types of flowers, flowers are typical ones in which the perianth opens and expose the sexual organs, with subsequent cross-pollination common. Other flowers the perianth remains closed (so the pollination is selfing).

*****Kinds or agencies of pollination in Angiosperm plants:-**

1- Animal pollination: Is the more directed and precise, necessitating the synthesis of many fewer pollen grains to effect fertilization of the eggs within ovules.

*****Types of animal pollination:**

1- Insect pollination (entomophily): It is the most common in angiosperm. There are different types of insect-pollinators:

- A- Bee pol.:** is correlated with flowers that tend to be showy, colorful usually preferred ultraviolet colors as in *Salvia*. The flowers often have specialized color patterns called **nectar guides**, which function to attract and orient the bee to maximally effect pollination.
- B- Butterfly pol.:** is associated with showy, colorful, and fragrant flowers, usually with no nectar guides. The flowers tend to have long, nectar-filled tubes or spurs as in *Delphinium*.
- C- Beetle pol.:** often thought to have been the ancestral type in the angiosperms, is correlated with open flowers (sexual organs exposed), often with a fruity or foul odor as in *Apium*.
- 2- **Bat pol.:** flowers here are often opened at night, large, white or colorful as in *Bauhinia*.
- 2- **Wind pollination:** is correlated with small, numerous, often unisexual flowers that tend to have a reduced non showy, or absent perianth. Pollen produced in large quantities.
- 3- **Water pollination:** may occur in aquatic plants with flowers either at or under the water surface.