**College of Science Al-Mustanseiriyah University Dep.: Biology**

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**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-** Cleistogamus 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.

1. **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.

1. **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***.

1. **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.