Chapter 12

Reproduction in Plants

What is Reproduction?

• The production of new organisms from their parents is known as reproduction.

• Modes of Reproduction: The plant produces its offspring (new plants) by two methods:

(a) Asexual Reproduction:

In asexual reproduction, plants can give rise to new plants without seeds. For example, Rose, dahlia, cactus, sweet potato, etc.

(b) Sexual Reproduction:

In sexual reproduction, new plants (offspring) are obtained from seeds. For example, Wheat, gram, peas, maize, sunflower, etc

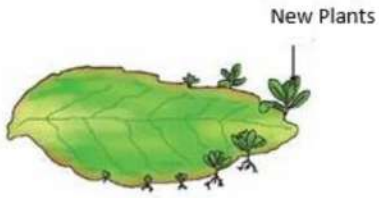
Asexual Reproduction in Plants

Asexual reproduction in plants can take place by the following methods:

♦ Vegetative propagation:

Vegetative propagation is a type of asexual reproduction in which new plants are produced from roots, stems, leaves, and buds.

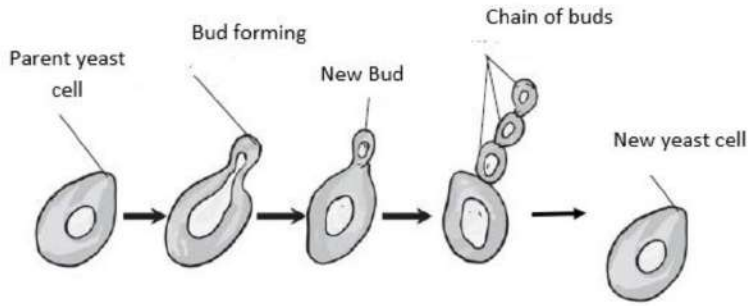
- Vegetative propagation by stems – Example: rose, Champa, money plant, and sugarcane.
- Vegetative propagation by roots – Example: Dahlia and sweet potato
- Vegetative propagation by leaves – Example: Bryophyllum



Leaf of Bryophyllum with buds in the margin

♦ Budding:

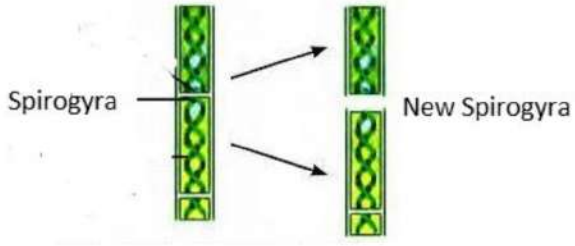
In budding, a small part of the body of the plant grows out as a bulb-like projection called 'bud' which gradually grows and detached from the parent body and forms a new plant. Eg: Yeast.



Reproduction in yeast by budding

♦ Fragmentation:

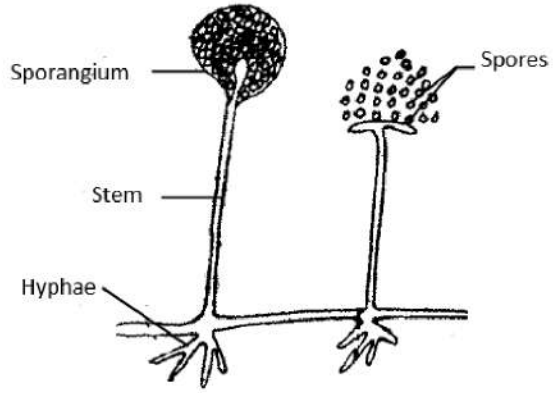
Fragmentation is the method in which the body of the plant is broken into two pieces on maturing and each part grows to form a new plant. Eg: Spirogyra (algae).



Reproduction in Spirogyra by fragmentation

♦ Spore formation:

In this method, the parent plant produces hundreds of tiny spores. These spores are released into the air and under favorable conditions; they germinate and produce new plants. Eg: Fungus and bread moulds.



Reproduction through spore formation in bread moulds (fungus)

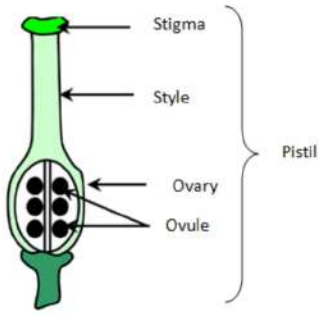
Sexual Reproduction

Flowers are the reproductive part of plants. Most flowering plants reproduce by sexual reproduction methods involving the fusion of sex cells called gametes. Flowers bear male reproductive organs (stamens) and female reproductive organs (pistil).

*Unisexual Flower - **Flower which contains either only stamen or only pistil.**

Bisexual Flower - **The flowers which contain both stamen and pistil.**

(a) Pistil:

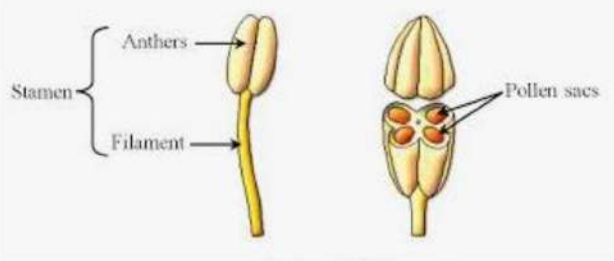


Pistil (female part) of a flower

The pistil is the female reproductive organ that consists of:

- Stigma - The top part of the pistil and receives the pollen grains from the anther of stamen during pollination.
- Style – It is a tube-like structure that connects the stigma to the ovary.
- Ovary – The swallow part at the bottom of a pistil is called the ovary. The ovary contains one or more ovules. The female gamete or the egg is formed in an ovule.

(b) Stamen:



Stamen

Stamen is the male reproductive organ that consists of two parts:

- Anther - It makes the pollen grains and stores them. Pollen grains contain the male gamete of the plant.
- Filament – The stalk of stamen is called a filament.

♦ Pollination:

The transfer of pollen grains from anther to the stigma of the same or another flower of the same kind is known as pollination. Pollination is done by wind, water, and insects. Pollination can occur in two ways:

(a) Self-pollination:

When pollen is transferred on the stigma of the same flower it is called self-pollination.

(b) Cross-pollination:

When the pollen is transferred on the stigma of another flower of the same or different plant it is called cross-pollination.

* Tip: Pollination is done by wind, water, and insects. Petals of flowers are generally colorful and have fragrances to attract insects for pollination.

♦ Fertilization:

The process of fusion of male and female gamete is called fertilization. The cells which result after the fusion of gametes is called a zygote. The zygote develops into an embryo. The embryo is that part of the seed which develops into a new plant.

Fruits and Seed Formation

• After fertilization, the mature ovary of the flower develops to form fruit and other parts of the flower fall off.

• The ovule present in the ovary grows to become a seed.

• The seed contains an embryo enclosed in a protective seed coat and food for developing a new plant.

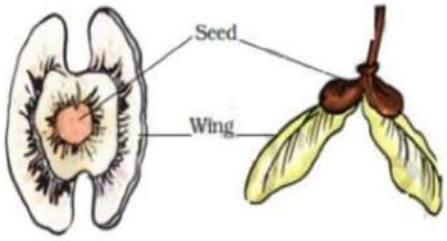
Seed Dispersal

Seeds and fruits of plants are carried away by the wind, water, and animals. They are called dispersal agents.

• Dispersal by Wind:

Seeds and fruits which are small in size and lightweight are dispersed by wind. They have hair or wings-like structure which help them to fly in the air. Ex: Sunflower, drumstick, and maple.

Hairy fruit of sunflower



Winged seed of drumstick

Winged seed of maple

Pic credit: NCERT

• Dispersal by Water:

Some seeds and fruits are dispersed by water. These seeds have the floating ability in the form of spongy or fibrous outer coats. Ex: Coconut and Water lily.

• Dispersal by Animals:

Some seeds develop hooks on their surface by which they get attached to the hairy bodies of animals and carried away to distant places. Ex: Xanthium and Urena.

• Dispersal by Explosion:

Some seeds are dispersed by bursting of fruits with sudden jerks. In this, the seeds are scattered far away from the parent plant. This is called the explosive mechanism of seed dispersal. Ex: Pea, caster and balsam