

Class 7 Biology Reproduction in Plants

Introduction

Introduction

Reproduction is the biological process of all organisms giving rise to new organisms similar to themselves.



Fig. Reproduction in plants and animals give rise to similar offsprings

Reproduction is the characteristic of all living organisms to maintain their population.

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Modes of reproduction

Modes of reproduction

Plants follow two modes of reproduction

- Asexual reproduction – The type of reproduction in which new organisms are produced by plants without seeds.

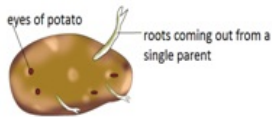


Fig. Asexual reproduction

- Sexual reproduction- The type of reproduction in which new organisms develops from seeds.

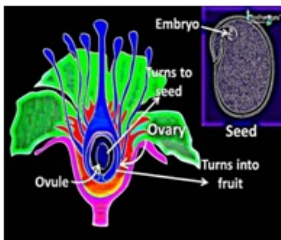


Fig. sexual reproduction through seeds

The body of plants consists of two parts – 1) Vegetative part 2) reproductive part

- Vegetative parts involve root, stems, buds and leaves and all other parts except flowers.



Fig. Vegetative parts of plants

- Reproductive parts involve the flowers.



Fig. Reproductive part of a plant

Sexual reproduction takes place through flowers.

Flowers have either both male and female parts in the same flower or male or female parts in separate flowers.

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Types Of asexual reproduction

Types Of asexual reproduction

Vegetative Propagation - When vegetative parts give rise to new plants, this type of reproduction is called as vegetative propagation.

- If a branch of a plant is cut with a node and watered every day, roots and new leaves come out. Nodes are the parts of the stem or branch at which a leaf arises.
- Flower buds and vegetative buds having short stems around which immature overlapping can give rise to a new plant. The buds which are present in the point of attachment of the leaf at the nodes are called vegetative buds.
- Scars present in potato called as eyes can give rise to new organisms.



Fig. Eyes in potato

- Bryophyllum can give rise to new plant from the buds present in the margin of leaves.



Fig. Bryophyllum

- Sweet potato and dahlia can give rise to new plants from roots.



Fig. dahlia

- In cactus, new plants are produced when the parts of the plant get detached from the main plant body and each part can give rise to a new organism.

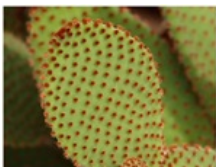


Fig. cactus

Budding-

- In unicellular organisms small bulb like projections called buds come out from the body of organisms.
- The bud grows like a chain and detaches from the parent body to form a new organism.
- The new detached cell grows and matures and becomes a new organism.

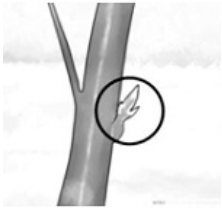


Fig. Budding

Fragmentation-

- The organisms break down into many fragments.
- The fragments grow into a new organism.
- Example -Spirogyra, a slimy green alga.

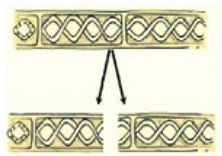


Fig. Fragmentation in spirogyra

Spore formation-

- Spores are special asexual reproductive structures covered by a hard protective coat.
- Spores can withstand unfavorable conditions such as high temperature with the help of protective coat.
- Spores can germinate under favorable conditions and can develop into a new individual.
- Spores can float in the air and cover long distance.
- Example- Moss and ferns.

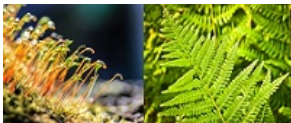


Fig. Mosses , ferns

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Sexual reproduction

Sexual reproduction

- Flowers are the reproductive parts of a plant.
- The male reproductive part of a flower is stamen and female reproductive part is pistil.
- Stamen consists of anther and the filament.
- Anther contains pollen grains and thus helps in formation of male gametes.
- Pistil consists of stigma, style and ovary.

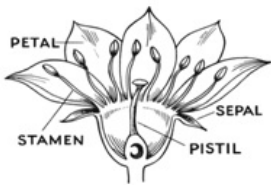


Fig. parts of a flower

- Female gametes are called as egg which is produced in the ovules of the ovary.
- Zygote is the 1 celled stage of an individual formed by the fusion of male and female gametes.
- When a flower contains both male and female gametes, it is called as bisexual flower. Example- mustard, rose.



Fig. Mustard flower

- When a flower contains either male or female gamete it is called unisexual flower. Example – corn, cucumber.



Fig. Corn flower

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Pollination

Pollination

- The process of transfer of pollen from the anther to the stigma of a flower is called pollination.
- Pollen grains are transferred to stigma by agents like air or water.



Fig. Pollination by an insect

- If the pollens are transferred to the stigma of the same flower it is called self pollination.
- If the pollens are transferred to the different flowers of the same plant or flowers of a different plant of the same kind it is called cross pollination.

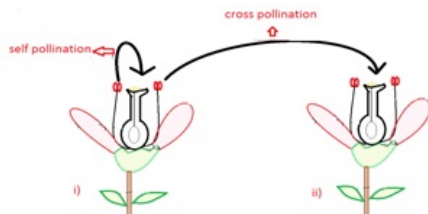


Fig. Self-pollination and cross pollination

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Fertilization

Fertilization

- Fertilization is the process of fusion of pollen, the male gamete and egg, the female gamete.
- Fertilization results in the formation of a zygote.
- Zygote is one celled stage of an individual which divides to form embryo.



Fig. fertilization

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Fruit and seed formation

Fruit and seed formation

- After formation of embryo, the parts of the flower fall off except the ovary.
- Ovary ripens into fruits.
- Ovules develop into seeds and seeds contain embryo.
- After formation, different fruits show different features.

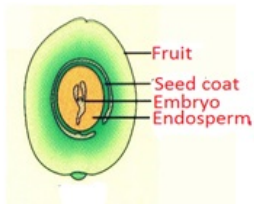


Fig. Fruit and seed formation

For example, mangoes and apples are fleshy and juicy fruits where as almonds and walnuts are hard fruits.

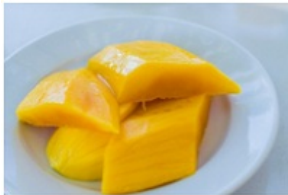


Fig. Fleshy and juicy mango



Fig. Hard almond

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Seed dispersal

Seed dispersal

- Seeds of a plant get dispersed to different places and form different plants at different places.
- Seeds are dispersed by water, wind and animals.
- Wind blow off the winged seeds of drumsticks, light seeds of grasses, hairy seeds of oak and hairy fruit of sunflower.



Fig. Seed dispersal

- Coconut seeds are dispersed by water as the seeds develop the capacity to float in the presence of sponge like or fibrous outer coat.



Fig. Coconut with fibrous outer coat

- Xanthium seeds are spiny with hooks and get attached to the bodies of animals and thus dispersed by animals.



Fig. Spiny xanthium seeds with hooks

- Castor and balsam seeds disperse far when the fruit disperse burst with sudden jerks.



Fig. Castor seeds

Advantages of seed dispersal

- Seed dispersal prevents competition between the plant and its own seedling for sunlight, water and nutrients.
- Plants can acquire new habitat by seed dispersal and distribute widely.