

Reproduction in Plant

1. What is Reproduction?

Ans. Reproduction means producing young ones of the same kind.

2. What are the different types of Reproduction?

Ans. Reproductions are broadly grouped into two types –

a. Asexual reproduction

In asexual reproduction, only one parent is involved and there is no formation of fusion of the male and female sex cells (gametes).

b. Sexual reproduction

In sexual reproduction, two parents are involved and there is formation and fusion of the male and female gametes.

3. What is Vegetative Propagation?

Ans. In some higher plants the vegetative parts of the plant like the root, stem or leaves help in producing new plants.

This is called Vegetative Propagation.

4. What is Binary fission?

Ans. In this method, the nucleus splits or divides into two and then the cell splits across the middle, forming two small identical cells called the Daughter Cells.

Lower organism like bacteria, reproduce asexually by the method of binary fission.

5. What is Multiple Fission?

Ans. In some organisms, like Chlorella and Chlamydomonas, one cell divides into four daughter cells. This process is called Multiple Fission.

6. How can Yeast reproduce new plant?

Ans. The parent cell of Yeast produces an outgrowth called bud. The bud grows, and then gets detached from the parent body to lead an independent life.

7. What is Fragmentation?

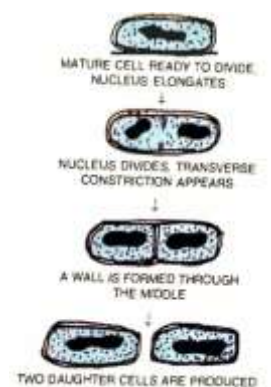
Ans. In organisms such as Spirogyra which are made of long, ribbon-like filaments, one filament grows and breaks off into two or more parts called fragments. Each fragment then regrows into an individual. This type of reproduction is called Fragmentation.

8. How mosses and ferns can reproduce themselves?

Ans. Mosses and Ferns can reproduce themselves through Spore Formation. These are ornamental plants and bear spores on the underside of their leaves. The spores are light and can be carried away by wind or insects to different places. On reaching suitable conditions for growth, spores germinate giving rise to new plants.

9. How new plants can reproduce by Stem?

Ans. The stems of common grass and mint grow horizontally parallel to the ground. New roots and shoots develop at their nodes. These roots grow downward into the soil and the shoot upward to form new plants.



2.1 Binary fission in bacteria

10. How Potato can reproduce new plant?

Ans. Potato can reproduce new plants with the help of their stem. Potato bears vegetative buds called the "eyes". Cut a piece of potato with an "eye". Put this piece in moist soil. New plants grow from these buds within a few days. Potatoes kept in humid warm months may grow out shoots. If placed in soil, they form complete plants.

11. How new plants can reproduce through leaf?

Ans. Leaves of some plants, such as Bryophyllum, produce buds in the notches in their margins. When such leaves fall in moist soil, their buds in the margins begin to grow as young tiny plants.

12. What is Vegetative Propagation?

Ans. Vegetative propagation is the process of formation of new plants from detached vegetative parts or propagules such as roots, stem, leaves, etc. The new plants produced by vegetative propagation are genetically identical to the parent plants.

13. What are the advantages of Vegetative Reproduction?

Ans. The advantages of Vegetative Reproduction are

- a. Reproduction by vegetative part: takes place in a shorter time.
- b. New plants, thus produced, spread very fast in a small area.
- c. It is a surer method of propagation.
- d. All the good characters of mother plant are retained by the daughter plants.

14. What are the disadvantages of Vegetative Reproduction?

Ans. Disadvantages of Vegetative Reproduction is

- a. All plants developed by vegetative reproduction are genetically identical, they are all likely to be affected simultaneously if a disease spreads in the farm.
- b. Dispersal of plants does not take place on its own. Daughter plants, so developed, tend to remain nearby and are restricted to a particular area leading to competition for resources.

15. Describe the process of Cutting?

Ans. In this method, the stem is cut into small pieces with each bearing an axillary bud. The cut ends are planted in moist soil. After a few days, they strike roots, and grow into new plants. This method is normally employed for propagating plants like sugarcane, rose, china rose, lemon, etc.

16. What is the method Layering?

Ans. In this method, a portion of one of the lower branches of the plant with an axillary bud at the node is bent down to the ground so that it touches the soil. A ring of bark is removed from this portion, which is then covered with soil. Some heavy object, such as a small piece of stone or a brick, is kept on the branch so that it does not come out of the soil. In a few days, when the branch gives out roots, it is cut off from the main plant. It then continues to grow as an independent plant. This method is used for the propagation of plants like mint, rose, jasmine, etc.

17. What is the method Grafting?

Ans. In some cases, such as rose, mango, guava, etc., a small shoot or bud of a desired variety of plant is intimately fixed on the stem of another plant of the same or related species. The plant receiving the bud or the shoot is called the stock and the shoot fixed on it is called the scion. For a successful graft, it is important that the cambium layers of the stock and the scion must come into very close contact so that growth may continue. The grafted points are then bound together with tape and the joint is covered with wax to prevent dehydration and is protected from any bacterial infection. In a few days, the new cells develop and a new plant grows.

18. What is Micro Propagation?

Ans. It is the propagation of plants by tissue culture technique. If Vegetative Propagation is not possible in a plant, then tissues of vegetative buds, shoot apex or any other suitable parts of the plant can be used as an explant for micro-propagation. The explants are treated with sterilisation chemicals to prevent microbial growth, and then cultured in a particular nutrient medium. Cells grow and divide to form a cell mass called callus. Some growth regulators are added. The callus differentiates into plant parts looking like a tiny plant, called plantlet. After 4-6 weeks, the plantlets are transferred to the soil. This can be used to develop and multiply disease-free stock. This technique is being used to grow orchids, Gladiolus, Chrysanthemum.

19. What are the benefits of plant Tissue Culture?

Ans. The benefits of plant tissue culture are

- a. It provides rapid propagation of identical individuals. This technique is very productive for superior varieties.
- b. It is very useful in cases where seeds are dormant. The embryo in these seeds can be cultured and microprogramed.

20. What are the limitations of Tissue Culture?

Ans. The limitations of Tissue Culture are:

- a. It requires a lot of scientific expertise.
- b. It cannot be applied to all cases.
- c. It is not easily applicable in remote agricultural areas.

21. What is Stalk or Pedicel?

Ans. The flower is attached to the shoot by means of a stalk or pedicel.

22. What are the four whorls of flowers?

Ans. The four whorls of Flowers are

- a. Calyx
- b. Corolla
- c. Androecium
- d. Gynoecium

23. What is Calx?

Ans. This is the outermost part of the flower forming a whorl of tiny green leaf-like structures are called Sepal.

In the bud condition, they enclose the inner parts of the flower providing them necessary protection.

24. What are Sepals?

Ans. Sepals are the green, outermost part of the flower.

25. What is Corolla?

Ans. Corolla is made up of petals, it forms the second inner whorl arranged next to the sepals. Usually, petals are white or coloured but rarely green. The petals make the flower attractive.

26. What are Petals?

Ans. Petal s are the large, fragrant and brightly coloured parts of the flower.

27. What is Androecium?

Ans. It is the male reproductive part of Flower.

It is the third whorl, inner to the petals, consisting of delicate, thread-like structures called the Stamens. Each stamen is formed of a long, narrow, thin filament and a broad sac-like bilobed anther found at its tip. Each anther contains four pollen sacs in which the pollen grains develop. The pollen grains contain the male gametes.

28. What are Stamens?

Ans. Stamens are the male reproductive parts of the flower.

29. What is Gynoecium?

Ans. The female part of flower which consists of carpels. It is the fourth innermost part of the flower. It is also called a pistil.

Each carpel is formed of three parts.

- a. A swollen ovary at the base
- b. A narrow thread like style in the middle and
- c. A terminal expanded stigma at the top.

30. What are Carpels?

Ans. Carpels are the female reproductive parts of the flowers.

31. What is Thalamus?

Ans. The tip of the stalk is enlarged and slightly flattened, from where, the petals and other parts arise. This flattened part of the stalk is called the thalamus.

32. What is Pollination?

Ans. Pollination is the process in which the pollen grains from the anthers are transferred to the stigma of a flower of the same species.

33. What are the different types of Pollinations?

Ans. Pollinations are two types

- a. Self-Pollinations
- b. Cross Pollinations

34. What is Self-Pollination?

Ans. Self-pollination is one that occurs either within the same flower or between two flowers on the same plant.

35. What is Cross Pollination?

Ans. Cross Pollination occurs between two flowers on different plants of the same species.

36. How Insects help pollination?

Ans. When insects help in pollination, such a transfer of pollen grains is called insect pollination.

Butterflies, bees and other insects visit flowers for nectar (honey). When an insect alights on a flower, the pollen grains stick to its mouth parts, wings, legs, etc. When this insect visits another flower, the pollen grains from its body may fall off on the stigma of that flower.

Marigold, Dahlia and Salvia are some of the insect pollinated flowers.

37. What are the characteristics of Insect pollinated flowers?

Ans. The characteristics of insect pollinated flowers are

- a) These flowers are large with coloured petals, to attract insects.
- b) These are scented so that insect locate the flowers by smell.
- c) These contain nectar as food for insects.
- d) These produce sticky pollen grain so that they may stick to the body parts of the insect.

38. What is Wind Pollination?

Ans. When wind is the agent of cross pollination, it is called wind pollination.

Some plants like maize, palm, pine, etc., produce dry pollen grains in large quantity.

When these flowers mature, the pollen grains get blown away by the wind. These pollen grains may fall in all sorts of places and some may even get wasted. But if they happen to fall on the stigma of a flower of the same type, then pollination occurs.

39. What are the characteristics of wind pollinated flowers?

Ans. The characteristics of wind pollinated flowers are:

- a. They are usually small and are of dull colours.
- b. They generally have long anthers protruding out of the flower so that pollen grains may get blown off easily.
- c. They produce a large quantity of pollen.
- d. The pollen grains are light so that they are easily carried away.

40. What is Water Pollination?

Ans. Pollination where water acts as an agent of cross pollination is known as water pollination.

41. What are the characteristics of water pollinated flowers?

Ans. The characteristics of water pollinated flowers are

- a. Flowers are small and light so that they can easily float on water.
- b. Male and female flowers are borne on separate plants.
- c. Pollen grains are produced in large numbers.

42. What is Pollen Tube?

Ans. After reaching the stigma of the flower of the same kind of plant, the pollen grain absorbs moisture from the stigma's surface and begins to grow a tube. This tube is called the pollen tube.

43. What is Fertilization?

Ans. Fertilization is the fusion of the male cell with the female cell to produce a zygote.

The ovary remains attached to the stalk of the flower and grows into a fruit. The ovules inside the ovary develop into seeds. Other parts, like the sepals and petals fall off.

44. What is Artificial Pollination?

Ans. Artificial Pollination means transfer of pollen grains to the stigma manually.

Artificial Pollination is practised by plant breeders for developing new varieties.