7th – Reproduction In Plants I

The process of producing young ones from their parents is known as reproduction. Plants reproduce through asexual, sexual and vegetative.

Asexual reproduction: The formation of new plants from the cells of a single parent is called asexual reproduction. Three common forms namely:

1. **Budding:** In this process, a small bud like outgrowth called bud. This bud keeps on increasing in size and forms an independent organism which separates from the parent.

2. **Fragmentation:** It is found in algae like spirogyra, focus. In this process adult organism breaks up into two or more pieces called fragments. Each fragment grows up to become a new plant.

3. **Spore formation**: Spores are single celled or several celled reproductive bodies that are spherical in shape. They are protected by thick wall when conditions are unfavorable. Spores are released when case bursts open and grow into new plants.

Vegetative Reproduction- In which, a cell, tissue or part of an organ of a plant develops into a new organism. Vegetative parts such as root, stem and leaf can be used to produce new plants. It is known as vegetative reproduction.

Natural methods-they do with the help of stems, roots and leaves.

Roots: Tuberous roots of dahlia, sweet potato can be set for multiplication. These roots have food stored in them.

Stems: Vegetative propagation through stems is of the following types;

- Plants such as grass have horizontal stems growing parallel to the ground, almost touching it.
- In plants such as mint horizontal stems arise from the base of the erect shoot, grow horizontally in the soil and then come out to form new aerial shoots.
- Some underground stems are: bulbs, tubers, rhizomes and corms.
- **Rhizomes** have buds from which outgrowths are produced which give rise to new plants. E.g. Ginger, turmeric, banana.
- **Bulbs** are very short underground stems in thickened fleshly bulb scales. Scales serve as sites of food storage.
- **Tubers** have buds in the eyes, which give rise to new plants e.g. potato.
- **Corms** have lots of rhizomes joined together which develop into new plants e.g. colocasia.

By Sub-Aerial Stems: Stems of some plants such as strawberry, mint, chrysanthemum, raspberry and grasses grow horizontally on the soil surface or just below it (sub-aerial). They never store food in them but conduct it away to the new plant until they are fully developed.

Leaves: leaves of a plant develop small buds called adventitious buds on their margin. These buds grow into new plants when leaf falls from parent plant.

Artificial methods: Plants can also be produced by artificial vegetative propagation methods. Some of these methods are cutting, grafting, layering, Tissue culture.

1. Cutting: It involves cutting off part of a stem, leaf, root and placing it in moist soil. After sometime, these stems develop roots at the base and grow into a new plant e.g. rose, sugarcane.

2. **Grafting:** This method used by the horticulturists to grow rose, mango, apple, pear, guava and many other plants for developing new varieties. The method is described in following steps:

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ABHYAS Academy, Behind Pragat Shiv Mandir, Near Govt. College, Nishat Cinema Road, Ambala Cantt.
Ph No. +91-171-2631595, 9416541198, e-Mail: anusethi1968@yahoo.com Website: www. abhyasonline.in

1. A small part of one plant called scion is inserted into the stem or root system of another plant fixed into the soil. The scion contains several buds.
2. The part of another plant which is fixed in the soil and in which scion is inserted is called stock.
3. The scion and stock are then firmly tied together.
4. After some days, their tissues join with each other and develop into a new variety of plant.
5. Grafting is used to produce new varieties of plants.

3. Layering -In this process, a young branch is lowered down and bent towards the ground and covered by moist soil. After sometime branch grow downwards. The branches then cut off from parent plant and grow into new plant.

4. **Tissue Culture:** Some plants like orchids, chrysanthemum and asparagus can be grown by the method of tissue culture. The method can be described in the following steps:

1. A piece of tissue is cut from the plant and kept in a nutrient medium.
2. The tissue grows into a mass called callus.
3. The small pieces of this callus are kept in different nutrient mediums to grow as new plants.
4. After adequate growth, these plantlets are then transferred into moist soil for further growth.

Tissue culture is used for rapid vegetative propagation as well as for the production of disease-free and pest-resistant plants. It is also known as **micro propagation.**

Advantages of vegetative reproduction-

- The plants produced by this method are identical copies of their parents.
- It is a useful method for growing plants which do not produce seeds.
- It is a quick and economical method large scale production of plants.
- Tissue culture method can be done at any time in the year.
- New varieties with desired qualities can be produced by this method.

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