REPRODUCTION
Part 2

LEARNING OUTCOMES.

Students will be able to

1. distinguish between vegetative propagation and artificial propagation;

2. explain vegetative propagation in plants (through stem,suckers and leaves);

3. describe the methods of artificial vegetative propagation (stem cuttings and grafting);

4. rationalize how parthenogenesis is a type of asexual reproduction;

5. define cloning.

Vegetative propagation and artificial propagation

Vegetative propagation is a form of asexual reproduction of a plant. Only one plant is involved and the offspring is the result of one parent. The new plant is genetically identical to the parent.

NATURAL VEGETATIVE PROPAGATION
New plants grow from parts of the parent plant. They include:

Stems: Runners are stems that grow horizontally above the ground. They have nodes where buds are formed. These buds grow into a new plant. E.g. strawberry suckers are lateral branches of the stem with terminal buds and grow from the base of underground stems of certain plants. E.g. Mint (podia) and banana.

Roots: New plants will grow out of swollen, modified roots called tubers. Buds develop at the base of the stem and then grow into new plants.

Leaves: Leaves of some plants will grow into a new plant if they become detached from the parent plant. The leaves of this plant have notches on their margins with adventitious buds. When a leaf falls on the ground the adventitious buds grow into new plants.

Bulbs: A bulb contains an underground stem. Leaves are attached to the stem. These leaves contain much stored food. At the centre of the bud is an apical bud. Also attached are lateral buds. The apical bud will produce leaves and a flower while the lateral buds will produce new shoots. As the plant grows and develops it will form a new bulb underground.

Artificial Vegetative Reproduction
Horticulturists and farmers use artificial means to produce plants that are identical to the parent plant. Some of the methods used are:

Cutting: Cuttings are part of the plant that is cut off of the parent plant. Shoots with leaves attached are usually used. New roots and leaves will grow from the cutting. The shoot is cut at an angle. A growth promoter may be used to help with the growth of the roots.

Grafting: In grafting two plants are used to develop a new plant with combined traits from the two parent plants. In grafting the scion is the above ground part of one plant. The scion is attached to the stock which is the rooted part of the second plant.

Layering: In layering a shoot of a parent plant is bent until it can be covered by soil. The tip of the shoot remains above the ground. New roots and eventually a new plant will grow. These plants can be separated.

Parthenogenesis

Parthenogenesis is a type of asexual reproduction in which the offspring develops from unfertilized eggs. It is particularly common amongst arthropods and rotifers, can also be found in some species of fish, amphibians, birds, and reptiles, but not in mammals. Parthenogenetic development also occurs in some plants species, such as roses and orange trees. In plants, its known as apomixis

Cloning

Cloning in biology is the process of producing similar populations of genetically identical individuals that occur in nature when organisms such as bacteria, insects or plants reproduce asexually. Cloning in biotechnology refers to processes used to create copies of DNA fragments (molecular cloning), cells (cell cloning), or organisms. The term also refers to the production of multiple copies of a product such as digital media or software.


Multiple
Choice
Questions

1. An example of a runner is

A. onion.
B. apple.
C. strawberry.
D orange.

2. Which of the following is a natural method of vegetative propagation?

A. Cutting
B. Suckers
C. Grafting
D. Layering