

Embryology

Asexual Reproduction

1. Mention the importance of vegetative propagation with eg. (4 marks) (2077)

- Importance of vegetative propagation:

i. Vegetative propagation is the only method of reproduction in those plants that cannot produce viable seeds such as banana, seedless grapes, seedless oranges, etc.

ii. Can be used for production of genetically identical

copies of plants called clones.

iii. Takes much less time and so is highly suitable for plants that have small number of seeds and long periods of seed dormancy.

iv. Superior quality fruits or flowers can be produced by the method of grafting.

Examples:

i) Production of new plants from the cut stem of rose, sugarcane, etc.

ii) Production of new plants from the leaf of Bryophyllum.

2. Explain the process of grafting with its importance.

(4 marks) (2062)

- Grafting:

- Technique of artificial vegetative propagation in which a piece of stem branch called scion is transplanted on to a piece of another stem branch called stock.

- When stocks are joined their cambium comes in direct contact with one another and the two fuses and grow as a single plant.

- For grafting, a good quality plant having well developed root system with disease

resistant variety is selected.

- Stem of stock is cut obliquely at about 20-30cm above the soil surface.

- Another plant having good quality flower or fruit is selected as scion.

- Stem is defoliated and obliquely cut.

- Cut ends of scion and stock are joined, grafting wax applied and then tied firmly.

- Due to close contact, cambium of stock and scion fuses and grows as a single plant.

- Grafting is possible for only dicot plants which are about 1 year old.

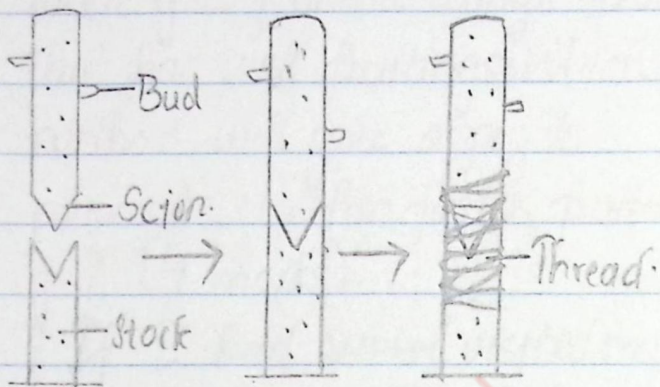


Fig: Grafting.

Importance:

- i) Quick fruiting and flowering can occur in plants propagated through grafting.
- ii) Can also combine the good features of two different plants onto a single plant.

3. You visited your friend's house where you found a mango species that had well fruitings. Which method will you apply to propagate it for faster fruitings? (4 marks)

- If I had ~~visiti~~ visited my friend's house where I found a mango species that had well fruitings, I would apply ~~gootee~~ and grafting to propagate it for faster fruitings.

i. Air layering (Gootee):

- Litchi, orange, lemon, pomegranate, etc. are commercially propagated.
- Only applicable for that plant

which has hard branches that lie far away from soil.

- Ring of bark is removed from the base of aerial branch.

- Covered by a moist clay.

- Area is then wrapped by polythene paper to prevent desiccation.

- Commonly done in rainy season.

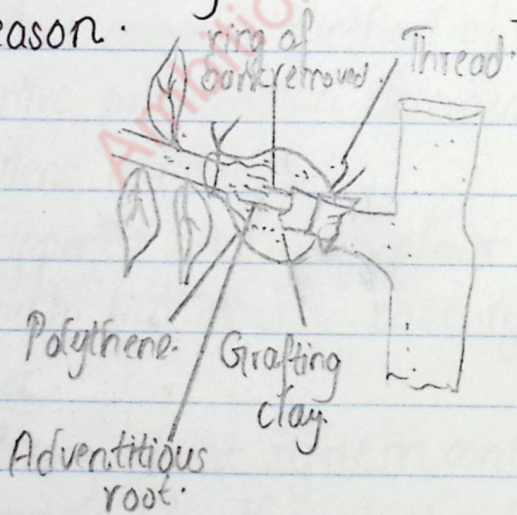


Fig: Vegetative propagation.

ii. Grafting.

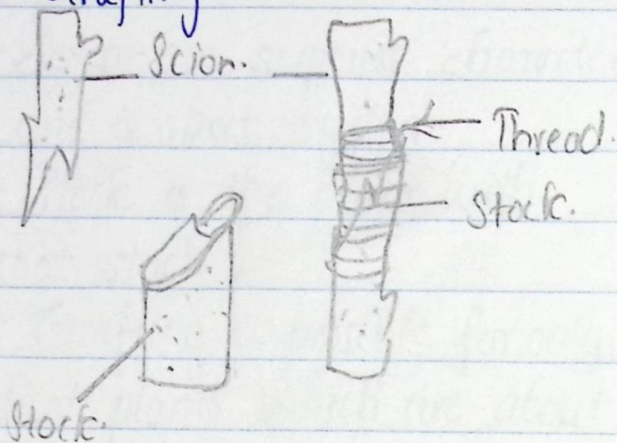


Fig: Grafting.

- Most common method of vegetative propagation described by ancient gardeners.
- Supported portion of plant which has strong root system: stock.
- Strong shoot system containing portion of other plant which is joint with stock: graft or scion.

- Scion - has superior character and is short system.
- Stock is the plant with root stock.
- Grafting is possible for only dicot plants which are about 1 year old.
- Stock and scion should be closely related species.