

Propagation in Horticultural Crops

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The multiplication or perpetuation of any plants from either by sexual or by asexual methods of propagation, generally termed as plant propagation.

Or

Plant propagation is the perpetuation or multiplication of mother plant into daughter plants by means of seeds and or any vegetative parts of the plant.

There are two types of plant propagation

Types

- Sexual or amphimixis propagation
- Asexual or vegetative plant propagation

Sexual or amphimixis plant propagation: The multiplication or perpetuation of plants by seeds that is known as sexual plant propagation.

For examples

- ✓ Phalsa
- ✓ Jamun
- ✓ Karonda
- ✓ Papaya
- ✓ Almost all vegetable crops
- ✓ Plantation crops etc.

In this group, highest variation is found.

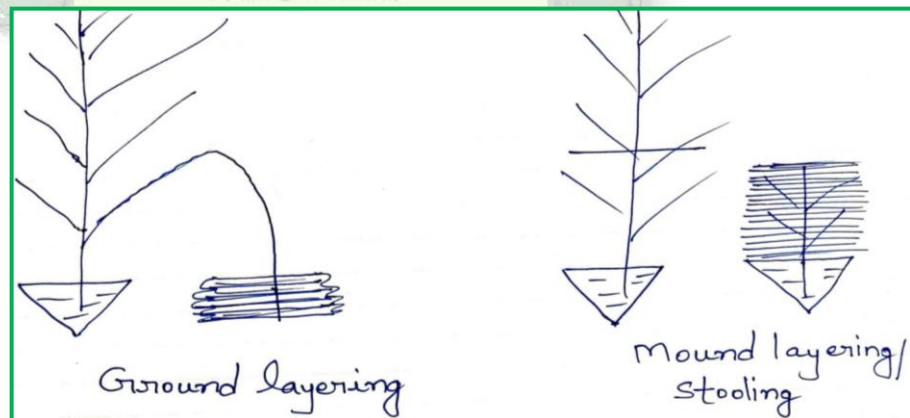
Asexual or vegetative plant propagation: The multiplication or perpetuation of any plant from any vegetative parts of plant that is termed as asexual or vegetative plant propagation. Vegetative parts like shoot/stem or root or leaf, suckers, off shoots, bulb, corm, clove and tuber etc.

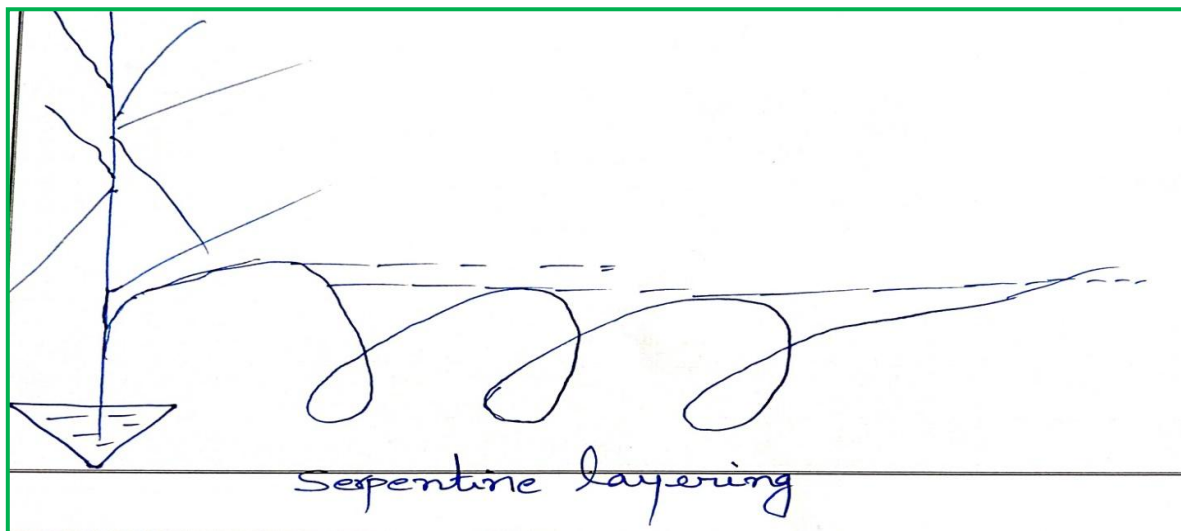
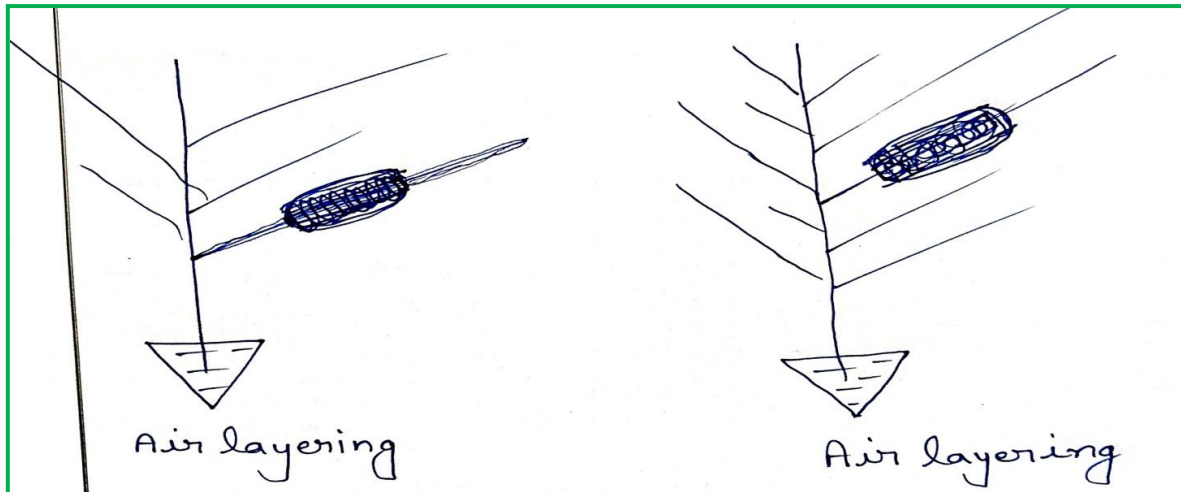
It is divided into two types-

Attached method

Layering

- ✓ Air layering,
- ✓ Serpentine layering,
- ✓ Ground layering and
- ✓ Mound layering/stooling etc.



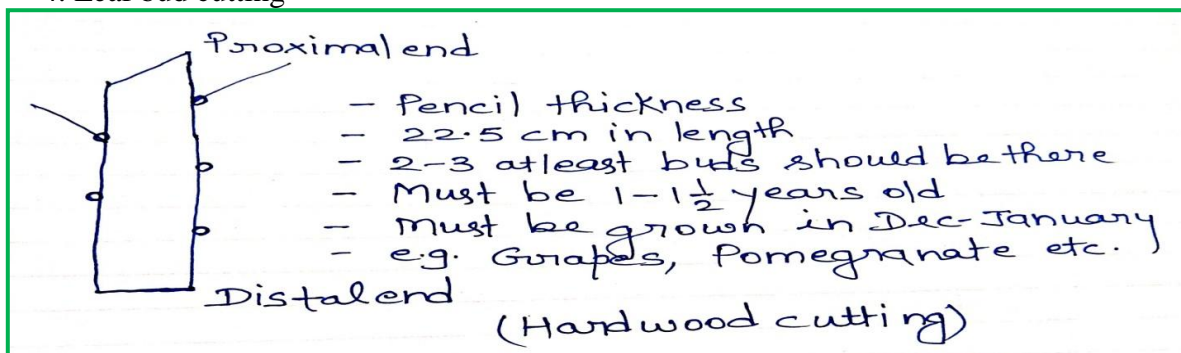


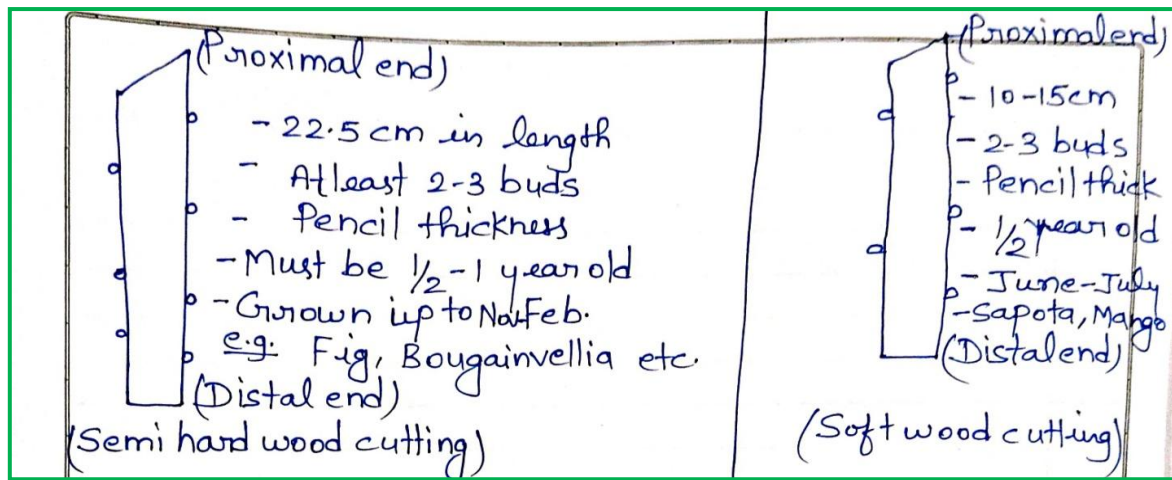
Detached method

- ✓ Cutting
- ✓ Budding
- ✓ Grafting

Cutting

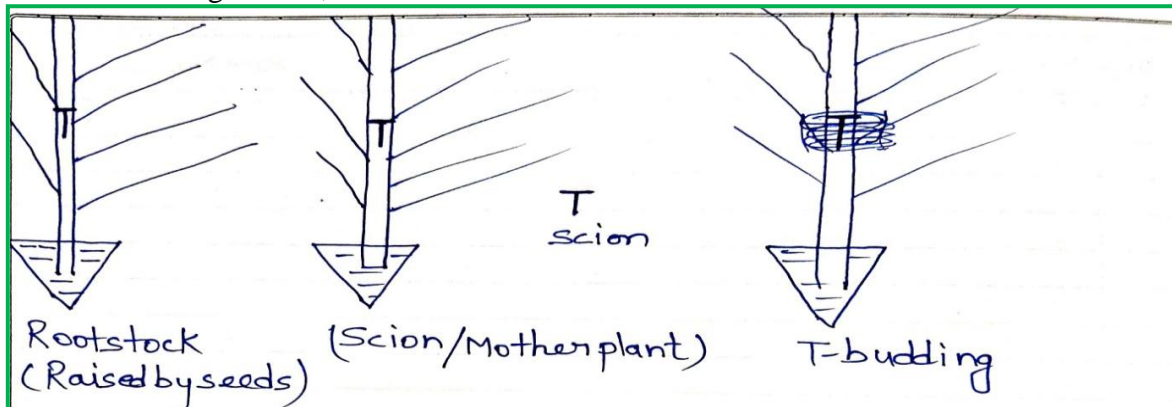
- ✓ Stem cutting
 - a) Hard wood cutting-Rose etc.
 - b) Soft wood cutting
 - c) Semi-hard wood cutting
- ✓ 2. Root cutting
- ✓ 3. Leaf cutting- Begonia etc.
- ✓ 4. Leaf bud cutting





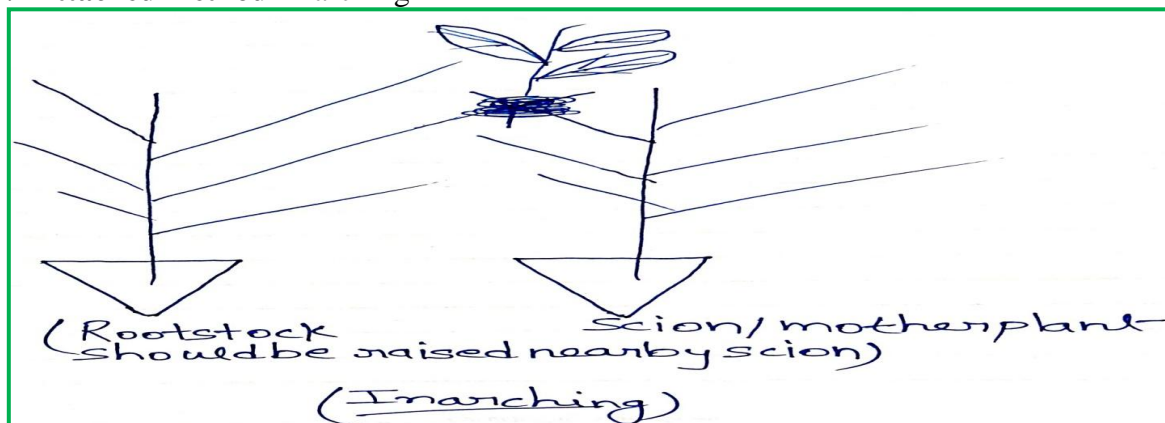
Budding

- ✓ T-budding/Shield budding- Ber and temperate fruit plants.
- ✓ I-budding- Ber
- ✓ Ring budding- Ber
- ✓ Patch budding- Aonla, Rubber even Jamun also.



Grafting

1. Attached method- Inarching

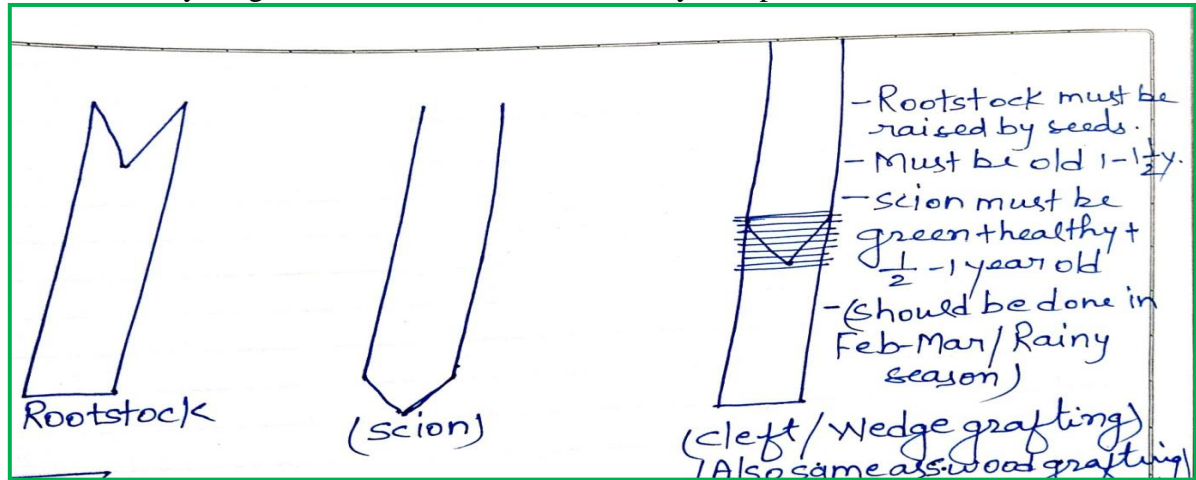


2. Detached method

- ✓ Veneer grafting- Mango
- ✓ Soft-wood grafting- Mango, sapota, mahua and custard apple
- ✓ Tongue grafting- Temperate fruits
- ✓ Stone/epicotyl grafting- mango
- ✓ Cleft or wedge grafting- Guava, macadamia nut and mandarin.
- ✓ Whip or slice grafting

- ✓ Notch grafting
- ✓ Bridge grafting- a form of stem repair grafting-stem
- ✓ Double working
- ✓ Top working/top grafting/ top budding

For grafting and budding there must be cambium attach to the plant but there is no need of cambium in layering. Cambium is the first whitish layer of plant after skin.



Advanced propagating methods

- ✓ Shoot tip grafting or Intra-generic grafting- Citrus and banana
- ✓ Micro grafting/budding- Citrus
- ✓ Micro cutting- Grapes

In vitro and In vivo: In vitro and In vivo are the Latin words. In vitro means study occurs in a controlled environment such as a test tube or Petridis whereas in vivo means to tests, experiments, and procedures that researchers perform in or no a whole living organism, such as a person, laboratory animal, or plant.

Terminologies

Rootstock: The lower portion of plants which make the root system is known as rootstock. Or you can say in other hands that a portion of plant/graft in which scion is inserting.

Scion: The upper portion of plants which makes the shoot, leaves, fruits, buds, seeds etc., is known as scion.

Mother plant: A mother plant is a plant grown for the purpose of taking cuttings or offsets in order to grow more quantity of the same plant.

Chimera: A plant or plant part that is composed of genetically different layers.

Double working: It is a method of rejuvenate of old and unproductive orchard either by grafting or budding on the same plant. It is the practice in which two successive either budding or grafting operations are performed on the same plant.

Clone: The term clone is used to represent a plant population derived from a single individual by asexual reproduction. It is just like copies of plant.

Clonal propagation: Clonal propagation refers to the process of asexual reproduction by multiplication of genetically identical copies of individual plants.

Micro-propagation: Clonal propagation in vitro is called micro-propagation.