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Center for Smart Agriculture

Floriculturist



Module 2: Propagation and nursery raising technology of floricultural plants

Session 5: Propagation of flowering plants



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Plants have the natural mechanism to multiply themselves by seeds and vegetative parts.

Methods of propagation

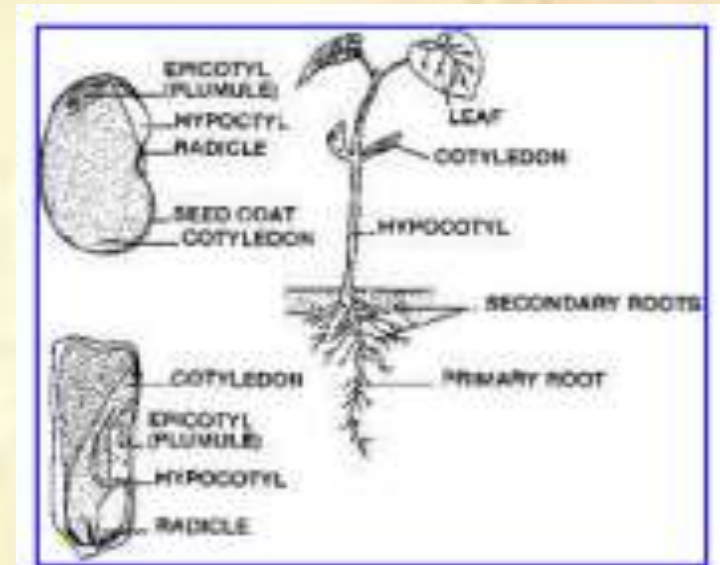
(A) Sexual propagation

(B) Asexual or vegetative propagation



(A) Sexual propagation

- ✓ Propagated sexually by seeds and spores.
- ✓ Rising of plants through seeds is necessary to obtain new plants or hybrids.
- ✓ Plants have long juvenile phase and takes more time to come into bearing.





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Scarification-

Seeds with hard coats require external treatments for germination like cracking of the coats by mechanical means, abrasion, soaking in water or acid, and stratification.

Stratification-

Fully exposing of the seeds to the weather by placing them in alternate layers of moist sand or sifted soil either in shallow boxes or in flats or in trenches outdoors.



Procedure for sowing of seeds

1. The seed pans of wooden or plastic materials (Protray) are generally used for raising seedling
2. Standard dimensions of the pans - 100x40 cm.
3. Sterilization of media is done either by moist steam or solarization.
4. Sterilized germination media used in seed pans.





4. Fine sieved sand mixed with coco peat is found best for the germination.

5. The sowing lines are made with the help of stick of pencil thickness at 5 cm apart from each other.

The depth of the line attained will be 0.5-1.0 cm.

7. The seeds are sown into the lines made.

8. A spray of water mixed with fungicide is recommended immediately after the sowing.



(B) Vegetative propagation

✓ The propagation of plants from vegetative plant parts such as buds, cuttings, roots etc

✓ Different methods of vegetative or asexual propagation such as

Cutting, Layering, division, separation, budding, grafting etc excluding tissue culture.



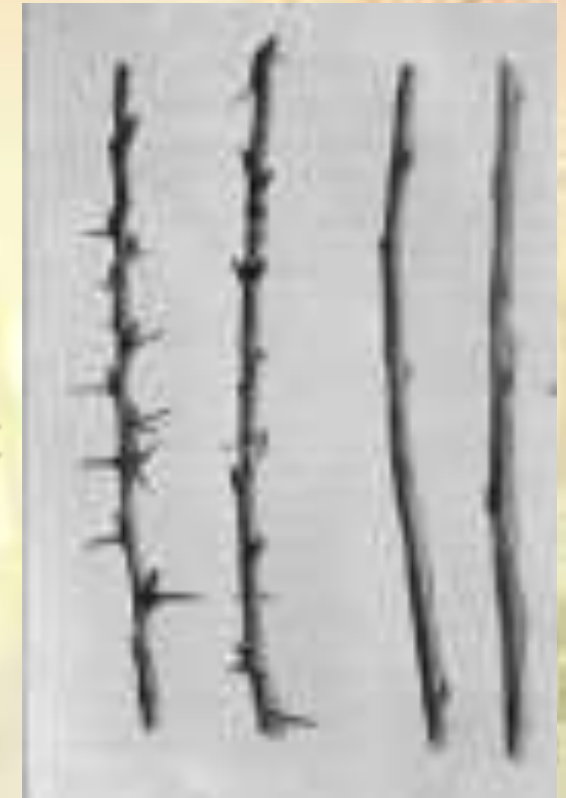
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Cuttings

✓ The plant parts used stems, leaves, and modified stems such as tubers, corms, rhizomes, runners, and bulbs.

✓ Propagation by cutting is the cheapest and the most convenient method





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Stem cuttings

Stem cuttings are of three types

- (a) Soft wood or herbaceous
- (b) Semihard wood
- (c) Hard wood.



- ✓ Cuttings with leaves are preferable over leafless cuttings.



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Soft wood cuttings

Soft wood cuttings may again be separated into two distinct categories

(i) Herbaceous plants such as Carnation, Chrysanthemum, Coleus, Dahlias, Delphiniums, Petunia etc. and

(ii) The unripened tips of woody plants such as most of the ornamental shrubs and some trees



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- ✓ Soft wood cuttings are taken from below a node and the bottom leaves are removed before planting.
- ✓ The soft wood or herbaceous cuttings are generally 2.5 cm to 10 cm long.

Semi-hard wood cuttings

- ✓ The portions of the stems which have passed the soft wood stage but are not yet mature are preferred to as semi-hard wood cuttings.



Hard wood cuttings

- ✓ Cuttings of shrubs and trees taken from mature current years growth.
- ✓ One meter to one and a half meters long hard wood cuttings in some trees and shrubs.
- ✓ Ex: *Ficus benghalensis*, *Citharexylon*, *Gliricidia maculate*, and species of *Erythriana*,



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- ✓ Cuttings of shrubs and trees taken from mature current years growth.
 - ✓ One meter to one and a half meters long hard wood cuttings in some trees and shrubs.
 - ✓ Ex: *Ficus benghalensis*, *Citharexylon*, *Gliricidia maculate*, and species of *Erythriana*,
 - ✓ when planted out in the open, root easily.
- Generally hard wood cuttings are 15-30 cm long.



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Terminal cuttings



Heel cuttings

Node cuttings





Layering

Layering is a method by which adventitious roots are caused to form on a stem while it is still attached to the parent plant.

Simple layering





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✓ Similar to simple layering except that the flexible branches are covered with soil in several places.

✓ The shoots are alternately covered and exposed over their entire length.

✓ Ex: Clematis, Peperomia



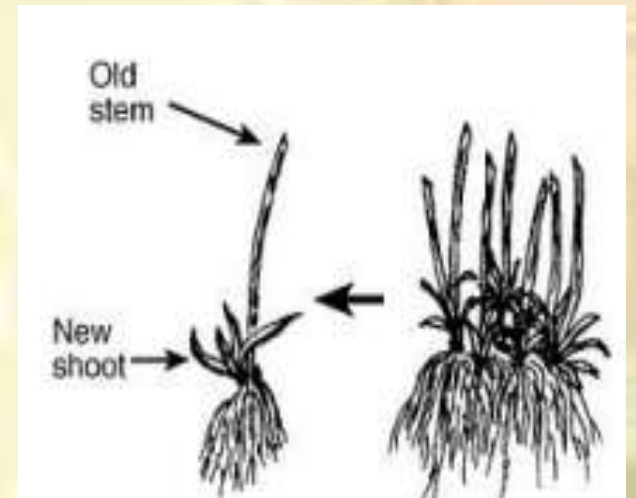


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Divisions

- ✓ Shrubs may be divided in the same manner but when the plants are dormant.
- ✓ Because shrubs are often woody, they may need to be separated with a shovel or hatchet.
- ✓ Before planting, trim back the shoots and cut off damaged roots.
- ✓ Dogwood, Summersweet
Euonymus, Hydrangea,
Kerria, Spirea and Snowberry,
Chrysanthemum, Day lily, Peony and Iris

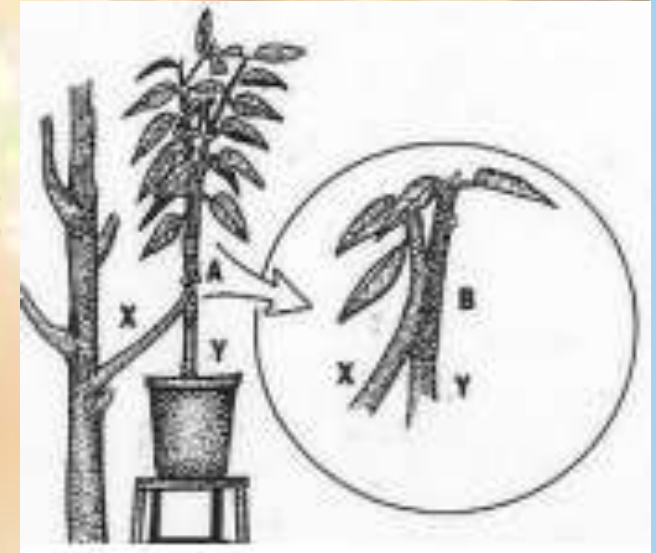




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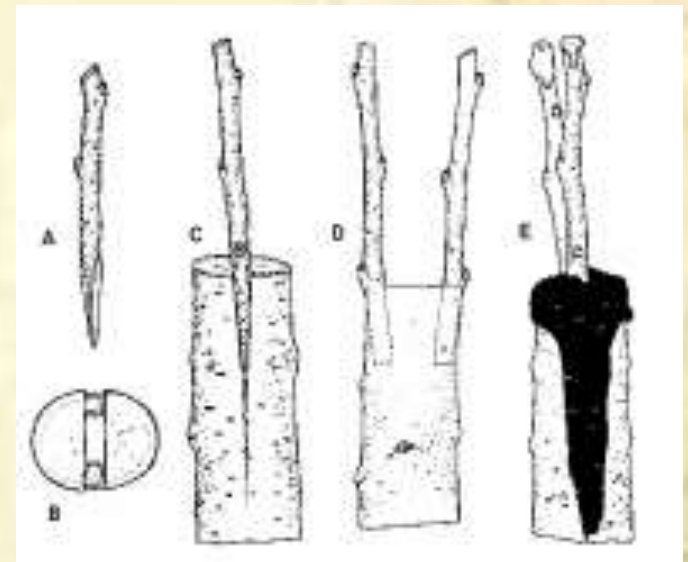
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Inarching or approach grafting



Softwood grafting

Epicotyl or stone grafting



Cleft grafting



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