

## Quadrant II – Transcript and Related Materials

**Programme:** Bachelor of Science (Second Year)

**Subject:** Botany

**Paper Code:** BOS101

**Paper Title:** Floriculture

**Unit:** 04

**Module Name:** Propagation - Layering, cutting and budding

**Name of the Presenter:** Ms. Dikshatha D. Faldessai

---

### Notes

#### Layering

- Layering is an attached method of propagation.
- In this method, roots are allowed to develop on the covered portion of the stem while still being attached to the mother plant.
- After the emergence and development of the roots, this portion is separated from the mother plant and allowed to grow as a new plant on its own root stem.
- Such root stem is known as 'layer'.

#### Simple Layering

- Simple layering can be accomplished by bending a low growing, flexible stem to the ground. Cover part of it with soil, leaving the remaining 6 to 12 inches above the soil. Bend the tip into a vertical position and stake in place.
- The sharp bend will often induce rooting, but wounding the lower side of the bent branch may help also.
- Simple layering can be done on most plants with low-growing branches. Periodically check for adequate moisture and for the formation of roots.
- Examples of plants propagated by simple layering include climbing roses, jasmine etc.

### **Compound (serpentine) layering**

- This is similar to simple layering, but several layers can result from a single stem.
- Bend the stem to the rooting medium as for simple layering, but alternately cover and expose sections of the stem.
- Each section should have at least one bud exposed and one bud covered with soil.
- Wound the lower side of each stem section to be covered.
- This method works well for plants producing vine-like growth such bougainvillea etc.

### **Mound (stool) layering**

- Mound (stool) layering is followed in plants whose branches are firm and difficult to bend.
- Cut the plant back to 1 inch above the soil surface in the dormant season. Dormant buds will produce new shoots in the spring.
- Mound soil over the new shoots as they grow. Roots will develop at the bases of the young shoots.
- Remove the layers in the dormant season.
- Mound layering works well on apple rootstocks, magnolia etc .

### **Air layering**

- Air layering is a technique performed without placing the layered branch or shoot below the soil line of the mother plant.
- The stem is first girdled.
- Then, the girdled section is wrapped in media like peat moss.
- Adding hormone to the media or directly applying it to the stem is very beneficial.

- The media is then enclosed in plastic and tied off.
- Once roots have formed the layer can be removed from the mother and planted.

## **Cutting**

- Cutting is a detached vegetative part of a plant, which on separation and planting is able to regenerate the missing parts and develop itself into a new plant.
- It is an inexpensive and quick method of propagation.
- A large number of uniform plants can be produced using few parent plants. It does not involve specialised skills.
- The method is named after the part of plant used for cutting, e.g., stem, root and leaf.

## **Stem cutting**

Stem cutting Based on the age and maturity of shoots detached for vegetative propagation, stem cuttings is of four types

### **i) Hardwood cutting**

Such a cutting is taken from woody plants. Mostly, deciduous plants are propagated by this method. One-year old mature branch is cut into pieces of suitable sizes and planted in the rooting medium, e.g., rose, bougainvillea, Jasminum, hibiscus, etc.

### **ii) Semi-hardwood cutting**

A semi-hardwood cutting is taken from 4 to 9-month old shoots of current season woody plants. Most ornamental foliage plants like croton, nerium, etc., are propagated by semi-hardwood cuttings.

### **iii) Softwood cutting**

Such a cutting is taken from herbaceous or succulent plants. Shoots of 2 to 3-month old plants are selected for softwood cuttings. Examples are alternanthera, duranta, etc.

#### iv) Herbaceous cutting

Such a cutting is taken from herbaceous plants. Shoots of 1 to 2-month old plants are selected for herbaceous cuttings. Examples are chrysanthemum, dahlia, petunia, carnation, marigold, etc.

### **Leaf cutting**

- Plants with thick fleshy leaves having buds are propagated by leaf cutting.
- Vegetative buds are present in the notches of leaf margin (bryophyllum) or on the vein.
- Leaf blade or pieces of it with bud are placed on the rooting medium under favorable conditions.
- Plants like snake plant (senseveria), rhododendron and bryophyllum are propagated by this method.

### **Root cutting**

- Quite a large number of plants can be grown by root cuttings.
- Any plant that readily produces sucker may be propagated by root cuttings.
- Root cuttings should be taken from young roots of average thickness and the length may vary from 2.5 to 15 cm with one or few buds.
- The cuttings are placed horizontally or vertically in light soil or sand.
- The longer (7cm or more ) cuttings are placed vertically.

**Budding:**

It is a grafting technique in which single a single bud from desired scion is used rather than an entire scion containing many buds.

**Types of budding****Patch budding**

- In this method a rectangular patch of about 3cm length and 1.5 cm wide is removed from the stem of rootstock.
- Similar patch of bud is removed from the bud wood with the bud in the centre.
- The bud patch is carefully removed inserted into the rootstock.

**Shield or "T" Budding**

- In this method "T" shaped incision is made on the rootstock stem.
- A transverse cut of 1.0-1.5 cm length is made first and then either below or above to this, a vertical cut of 2.5 to 3.0 cm length is made and connected to the transverse cut.
- The bark is then lifted by using budding knife. The scion bud is removed in the form of shield with or without piece of wood. The bud piece containing a bud is prepared with an upward cut.
- The cut should begin about ½ inch below the bud and should go deep enough into the wood so that cut the is finished about ½ inch above the bud. The bark is raised and then the bud is inserted into "T" cut surface of rootstock. Then it is secured in the position by proper bandaging.

**Ring budding**

- In this method, a bark of approximately 3–6 cm wide in ring form is removed from the stock.
- The same dimension of bark with a healthy bud is removed from the scion bud stick and placed on the stalk.

- After placing the ring in position, tie it with a polythene strip, keeping the bud exposed.

### **Chip budding**

- This method is followed when the bark is thin and cannot be removed easily.
- In this method, a piece of thin bark, along with some wood piece, is removed between two nodes of the rootstock, and the same size of chip, which is similar in shape and is collected from the scion, is placed on the rootstock.