

## Botany (Major)

Course: DSE-2

Semester: 5th

**Layering:** It is one of the oldest techniques used to propagate woody plants. Here stem is induced to root when it still attached to parent plants. It is easy to perform, can be used in case of species which do not root easily. But large number of plants cannot be produced within short period of time.

### Types of layering:

- 1. Simple layering:** It is the easiest and most effective method and is practiced in a great variety of woody plants without disturbing the parent plant. It differs from natural layering. Low sweeping, inflexible branches are most suitable for simple layering. The selected shoot is first trimmed off side branches and leaves and then bent to ground level and covered with 5 to 7.5 centimetres soil in which tips are exposed above the soil. The soil around the buried stem is kept moist. It is performed in the spring or rainy season. If the conditions are favorable rooting is complete within 4 to 8 weeks. The rooted layer is separated from the stock plant and kept in pot in the nursery.
- 2. Tip layering:** The growing tips of the current year's shoots are bent and buried in the soil to a depth of 5 to 7.5 centimetre or maybe inserted into pots. The curved portions become etiolated, swollen and strike roots within 2 to 3 weeks. In case of large scale production a shallow trench is dug along the row from a short distance of the parent plants and all the lateral tips are covered. When rooting is complete the layer is detached from the mother plant and transplanted in a permanent location or in the nursery. It is practiced in blackberries, currants etc.
- 3. Compound or Serpentine layering:** It is very easy to perform and practiced in plants with long slender and flexible shoots like Jasminum. The shoots are layered into pots. A slanting cut is given at a point where the shoot is to be layered. Stems are laid in the ground and alternately covered and exposed over the entire length rooting takes place at the node which is covered and shoots develop from buds at nodes which are not covered. After rooting the layered branch is cut into sections.
- 4. Trench or continuous layering:** Here the middle and basal portion of a young stem are placed in a shallow trench and covered with moist soil leaving the terminal portion exposed. Plants such as apple can be propagated by this method. The mother plants are planted in the base of a trench at an angle of 45 degrees in rows and spaced 90 centimetres apart. Plants are picked down in the shallow trench along the rows in the dormant season. Before the buds break the entire plant is covered with soil and more soil is placed as the shoots grow up until the base of the shoot is covered to a depth of 10 to 15 centimetres. In the following dormant season rooted shoot is detached from the mother plant to form a new plant and transferred in nursery beds.
- 5. Air layering:** It is one of the oldest technique. It is also known as Chinese layering or marcottage or gootee. This technique is very popular and easy to perform. Long shoots of one to 2 years are the most suitable for this purpose, older branches are not suitable. Leaves are removed from the base of the shoot to be layered and then the stem is given a notch. The notch or the girdle interrupts phloem transport and build up high carbohydrate and Hormone above the wound. The cut surface is sometime treated with root promoting substance. The injured area is covered with moist soil and the ball of earth is again covered with moist peat Moss and further wrapped with polythene film. The use of polythene film has some advantages as it keeps the rooting medium

moist and made permeable to oxygen and carbon dioxide, it is sufficiently tough and being transparent the developing roots are easily visible. Rooting takes place within 4 to 8 weeks. The rooted layer is detached from the parent plant in 2 or 3 stages. The first cut is given below the point of root emergence, the second cut which deepens the first one is given a week later and a few days after, the final cut follows. The layers are planted in pots or in the nursery bed. Plants like litchi, guava, lime etc. are propagated.

6. **Mound or Stool layering:** Here the stem is cut to a height of 10 to 15 centimetre from the ground during the non growing season. New shoots develop from the buds and when they attain a height of 20 centimetre they are earthed up by heaping a mound of soil around the stump. As the shoots grow earthing up is continued until each shoot is buried to about 15 to 23.5 centimetre. The plants with stiff woody branches are most suitable for this type of layering. Apple, gooseberries etc. are propagated by this means. A stool bed can be used for 15 to 20 years. The mother plants are set in rows one metre to 2 metre apart. Timely irrigation and pest control are necessary to keep the stool plants healthy.