

Horticulture Science

Lesson 17

Propagating Plants by Division, Separation, and Layering



Student Learning Objectives

- Explain separation and division.
- Describe layering and identify four common forms of layering.



What are separation and division?

- ▶ Propagation of horticulture crops can be done by separating or dividing plants.
- ▶ These are common methods used with perennials and foliage plants.
- ▶ Some woody shrubs can be divided as well.



What are separation and division?

- ▶ Some plants produce vegetative plant structures that can be removed intact from the parent plant.
- ▶ Removal and planting of these vegetative structures is *separation*.
- ▶ With *division*, the plant roots or the entire plant may be cut into sections to make two or more plants from the original plant.




What are separation and division?

- ▶ Many perennials have a ***plant crown***, which is the part of the plant at the soil surface from which new shoots or leaves are produced.
 - ▶ These plants are lifted from the soil and the crown divided into sections to produce new plants.
- A good example is the daylily, which can be divided by digging a plant and cutting it into smaller portions. Can you think of another example???



What are separation and division?

- ▶ With many herbaceous perennial plants, the central part of the crown becomes woody after several years.
 - ▶ As a crown becomes woody, it produces fewer shoots and becomes less vigorous.
 - ▶ When this occurs, the plants should be divided into smaller clumps and reestablished.
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What are separation and division?

- ▶ Rhizomes and tubers can be dug and cut into pieces that will produce new plants.
 - ***Rhizomes*** are underground stems that grow horizontally just below the soil surface.
 - Iris and lily-of-the-valley may be propagated by dividing their rhizomes into sections.



- Each section must have an “eye,” or node, that will produce roots for the new plant.



What are separation and division?

- ***Tubers*** are underground stems similar to rhizomes except that the “eyes,” or nodes, produce new shoots instead of roots.
- Irish potato, begonia, and gloxinia are plants that produce tubers which may be used to propagate new plants.



What are separation and division?

- ▶ There are several methods used to propagate bulbs and corms.
 - **Bulbs** are shortened underground stems enclosed with fleshy leaves.
 - Some species of lilies produce **bulbils**, or tiny aboveground bulbs, in the axils of their leaves.

- These can be removed and planted.



What are separation and division?

- ▶ Lilies also may produce tiny bulbs below the ground called *bulblets*.
- ▶ Some lilies and fritillaries can be propagated by removing bulb scales and placing them in moist medium.
- ▶ In time, the scales root and produce bulblets that can be separated and planted.



What are separation and division?

- ▶ Tulips and narcissus reproduce by natural division.
- ▶ Bulbs are produced off the main bulb.
- ▶ These are separated and planted.
- ▶ Hyacinths are very slow to reproduce by natural division.
- ▶ They can be encouraged to produce bulblets by scooping or scoring.



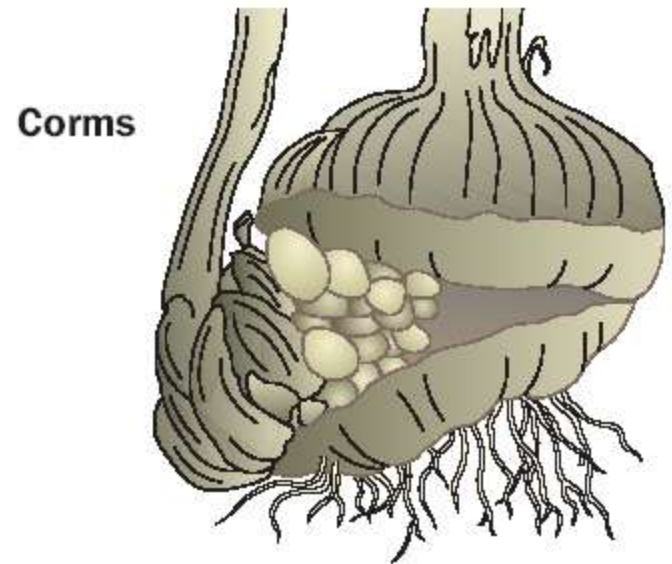
What are separation and division?

- ▶ ***Scooping*** involves the removal of the basal plate of the bulb and the bases of all the bulb scales.
 - Placed upside down in a warm dry cabinet, a bulblet will form at the base of each scale.
- ▶ ***Scoring*** is similar to scooping.
 - However, the basal plate is not removed. Two cuts that cross the basal plate are made about $\frac{1}{4}$ inch deep.



What are separation and division?

- ▶ ***Corms*** are globe-shaped, fleshy underground stems.
- ▶ Corms, including crocus and gladiola, can be cut into smaller pieces.
- ▶ Each piece of the corm must have a bud that is capable of developing into a stem.



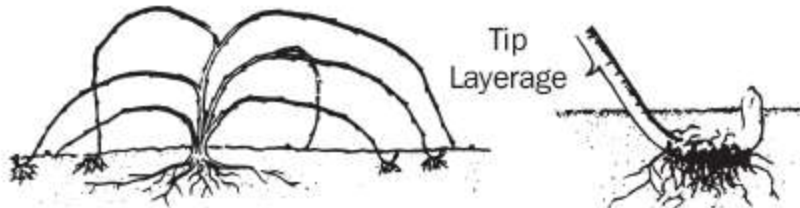
What are separation and division?

- ▶ Corms also develop small corms called *cormels*.
- ▶ These miniature corms can be separated and planted.



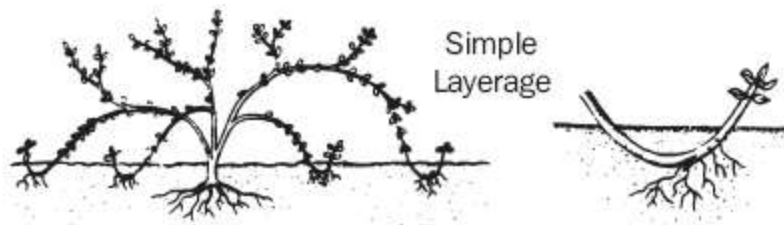
What is layering and how is it used to propagate plants?

- ▶ **Layering** is a method of asexual propagation in which roots are formed on a stem while it is still attached to the parent plant.
- ▶ The parent plant supports the new plant during root development.
- ▶ Once the new plant can function on its own, it is removed from the parent.



What is layering and how is it used to propagate plants?

- ▶ ***Simple layering*** is accomplished by bending a branch to the ground, slightly cutting or wounding the stem, and covering the wounded portion with 2 to 3 inches of soil.
- ▶ The wounded area forms a callus and then produces new roots.



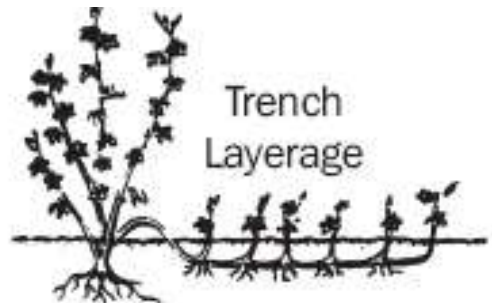
What is layering and how is it used to propagate plants?

- ▶ After new roots are fairly well developed the plant is removed from the parent plant.
- ▶ Many types of woody shrubs can be propagated using this method.



What is layering and how is it used to propagate plants?

- ▶ ***Trench layering*** involves a shallow trench that is dug near the parent plant.
- ▶ An entire branch is bent over, placed in the trench, and then covered with 2 to 5 inches of soil.
- ▶ After a few weeks, roots develop along the stem, and new shoots form at each node.



What is layering and how is it used to propagate plants?

- ▶ When the new plants reach the desirable size, they are separated from the parent plant.
- ▶ This method often produces many new plants and is used for fruit and nut trees that do not easily propagate from cuttings.



What is layering and how is it used to propagate plants?

- ▶ Ornamental shrubs, roses, and gooseberries are examples of plants frequently propagated by mound layering.
- ▶ To perform ***mound layering***, the grower severely prunes the parent plant to 2- to 4-inch stubs.
- ▶ The stubs are then covered with soil.



What is layering and how is it used to propagate plants?

- ▶ The mounded shrub is left undisturbed until the following spring.
- ▶ During that time roots develop at the base of each stem.
- ▶ The newly rooted plants can then be separated from the parent plant.



What is layering and how is it used to propagate plants?

- ▶ ***Air layering*** involves girdling the stem about 6 to 9 inches from the growing tip.
- ▶ Root-inducing hormone is applied to the cut area and moist sphagnum moss placed over the exposed area.
- ▶ Plastic is wrapped around the moss and tied to maintain moisture.

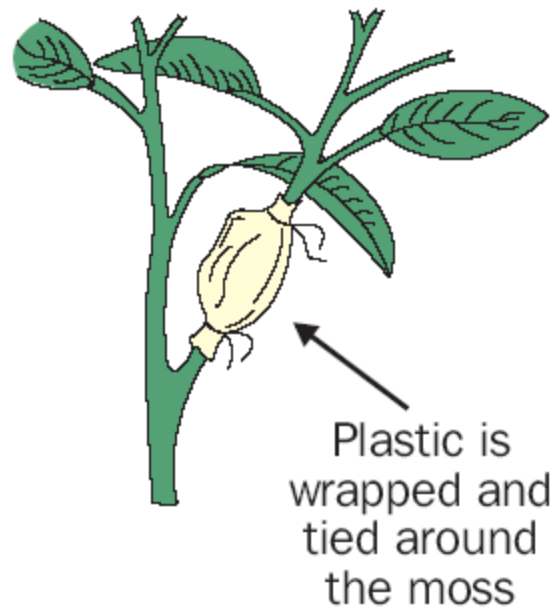
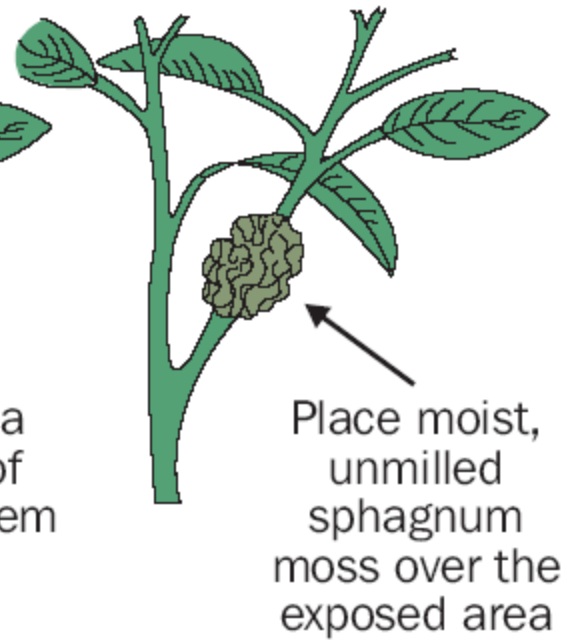


What is layering and how is it used to propagate plants?

- ▶ After roots develop, the top part of the plant is cut just below the rooted area.
- ▶ The new plant is then potted to grow on its own.
- ▶ Foliage plants are occasionally propagated by air layering.



AIR LAYERING



Review/Summary

- What are separation and division?
- What is layering and how is it used to propagate plants?

