



Layering Propagation for the Home Gardener

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What is Layering?

Layering is a technique of plant propagation where the new plant remains at least partially attached to the mother plant while forming new roots and can occur naturally through modified stem structures (Table 1).

Layering is a tried and true method of asexual propagation that does not require any special tools or controlled environmental conditions, like a mist bench, to facilitate rooting. The techniques required are easily mastered by the home gardener. Layering techniques allow desired shrubs, vines and indoor plants to be propagated using less space. Hard-to-root plants propagated using layering techniques generally form roots more quickly with greater overall success than when they are propagated from cuttings. Layering can be started in the spring or early summer, and daughter plants are ready to be separated and transplanted a month or two later. Many gardeners may have an heirloom shrub, vine or houseplant they wish to propagate to have more plants for planting at home or distributing among friends and family. It is important to remember that many newer cultivars may be under patent protection and Patent Laws may apply.

Patent Laws

Newly created plants can be patented like other new inventions and technology, and are legally protected from being propagated for a

certain period of time. It is important to know whether a plant is patented or not to avoid illegal propagation. Fortunately, many of our favorite old varieties are now in public domain and can be legally propagated and shared. Restricting home propagation for personal use may seem unfair, but without the sales of these new plants, plant breeders might not be able to afford to create all the exciting and often disease-resistant new plant varieties we see at garden centers each spring.

Layering Methods

The five basic types of layering are tip, simple, compound (serpentine), mound (stool), and air. For tip, simple, mound, and compound layering, part of the stem is buried to form the new roots and for air layering new roots form above the soil surface.

Tip – A flexible stem or cane of the current season’s growth is bent to the soil surface, and just the shoot tip, or a section just beneath the shoot tip, is buried in a hole, pegged with stakes if required, and covered with media or soil.

Plants to try: blackberries, raspberries, dewberries, loganberries, and other members of the genus *Rubus* L.

Simple – Similar to tip layering, except a 6- to 12-inch section with the shoot tip is left above the ground.

Plants to try: climbing roses, forsythia, rhododendron, honeysuckle, boxwood, azalea, jasmine, abelia, pyracantha and wax myrtle.

Compound – Based on the same principle as tip and simple layers, only this time burying a section of stem at several points along its length, leaving stem between uncovered. It is important to make sure at least one lateral bud is buried and one is left exposed at each section. The best plants for this treatment are vine-type and trailing ground covers.

Table 1. Structures used in natural layering (Hartman et al., 2002).

Type of Modified Stem Structure	Growth Habit	Plants Propagated by These Structures
Stolons	A trailing or arched stem that grows horizontally above or below the soil to form new plants at the nodes.	Dogwood (<i>Cornus stolonifera</i>), bugleweed (<i>Ajuga</i>), mint (<i>Mentha</i>)
Runners	A specialized type of stolon (usually without leaves) that arises from the axil of a leaf at the crown and grows horizontally above ground.	Strawberry (<i>Fragaria</i>), spider plant (<i>Chlorophytum</i>), strawberry geranium (<i>Saxifraga</i>)
Rhizomes	A horizontal stem distinguished from a stolon because it is also modified as a storage organ. Usually found in ferns and monocots.	Iris, Solomon’s seal (<i>Polygonatum</i>)
Crowns	The growing point of a plant at the soil surface where new shoots are formed.	Many herbaceous perennials and ornamental grasses.
Offsets	Short horizontal shoot at the base of the main stem that forms an independent crown.	Many bulbs, daylily, <i>Hosta</i> , palms
Suckers	Shoots that develop from underground roots or shoots. In most cases, these arise from roots.	Raspberry (<i>Rubus</i>), pawpaw (<i>Asimina</i>)



Tip propagation



Air propagation



Compound propagation

Plants to try: heart-leaf philodendron, pothos, wisteria, clematis, grapes, rambler roses, vining honeysuckle, willow, viburnum, dogwood, and many other vines or trailing groundcovers.

Mound or Stool – The mounding process happens in several steps throughout a growing season. Soil or substrates, such as mulch, are placed around the base of the plant for a few weeks or months until roots develop on shoots that arise from buds located on the main stem. Soil should be placed around the plant up to half its height. Once roots have developed on the lateral shoots, cut the shoots from the main stem right underneath the newly developed roots. The rooted cuttings are ready to be planted. Then, if so desired, the mounding process can begin again. This method is often used by plant nurseries to propagate dwarf understocks for fruiting trees and can be used on ornamentals like spirea and flowering quince.

Air – Find a branch about midway up the trunk, within reach, that is about 1 to 2 inches in diameter. It is better to go with a bigger branch than a smaller one to ensure layering success. Then make a vertical cut in the upper parts of the stem along with two horizontal cuts at the top and bottom of the vertical one. Then peel off the bark around the entire circumference of that area of stem (it needs to be at least 1 inch to 2 inches). Auxin can be applied for faster rooting if available. Then the cut area is wrapped with moist peat moss and plastic wrap, and secured by twist ties or rubber bands. After roots have penetrated the peat moss and are visible from all sides, then it is time to plant the cutting. The cutting can be cut off just below the roots, making sure that they are not damaged. *Plants to try:* croton, dumb cane, dracaena, Norfolk Island pine, rubber plant, schefflera, azalea, magnolia, roses and Oregon grape holly.

Ways to Improve Layering Success

1. **Wound induction** – Wounding the stem can help initiate adventitious root formation. Making slanting cuts on the bottom of the stem less than half the diameter will partially sever the phloem. Auxin, an important natural hormone that induces root formation, moves through the phloem from the shoot tip to the roots. Auxin accumulates above the wound. The wounded tissue makes callus, which is the de-differentiated plant tissue that becomes new plant organs. Another method is to girdle the stem completely of its bark while leaving the wood.
2. **Light restriction/blanching** – Restricting light often promotes root formation, so make sure your stem section is well covered with substrate before wrapping with plastic wrap. Light can be further reduced by wrapping in aluminum foil, which works well because it reflects light and heat. When layering in the ground, the soil or other media should completely cover the area you wish to form new roots.
3. **Plant selection** – Choose plants with stems pliant enough to bend to the ground without damage, to protect against insect or pathogen contamination. For most types of layering, current season's growth is often the most pliant and better nutritionally equipped to form new roots.
4. **Rooting hormone** – A light application of auxin can often help increase the chance of success.

Choice of Layering

Certain plants do better with certain layering techniques. For instance, tip layering works well on blackberries. The easiest types of layering are tip layering and simple layering. Almost anyone can do these and be successful with the right plants. The method selected depends on what is best for the plant and ease of propagation. If possible, select wood for layering that would normally be pruned when shaping the plant. Layering is simple and fun. It is a great money saving hobby, and great for nursery and landscaping businesses to use.

Reference

Hartmann, H.T., D.E. Kester, F.T. Davies, R.L. Geneve. 2002. Plant propagation: Principles and practices. Prentice Hall. Upper Saddle River, N.J.

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