

# SIMPLE VEGETATIVE PROPAGATION TECHNIQUES

## CUTTINGS

A cutting is a vegetative plant part which is severed from the parent plant to regenerate itself, and form a new, genetically identical plant. Many types of plants, both woody and herbaceous, can be propagated by cuttings.

When taking cuttings, remove any flowers and flower buds from the cuttings so that the energy and stored carbohydrates will go toward root and shoot formation rather than fruit and seed production. A rooting hormone can be used to speed or enhance rooting (except on soft, fleshy stems).

Insert cuttings into a rooting medium (such as coarse sand, vermiculite, soil, water, or a mixture of peat and perlite). In general, the rooting medium should be sterile, low in fertility, drain well enough to provide oxygen, and retain enough moisture to prevent it from drying out. Moisten the medium before inserting the cuttings.

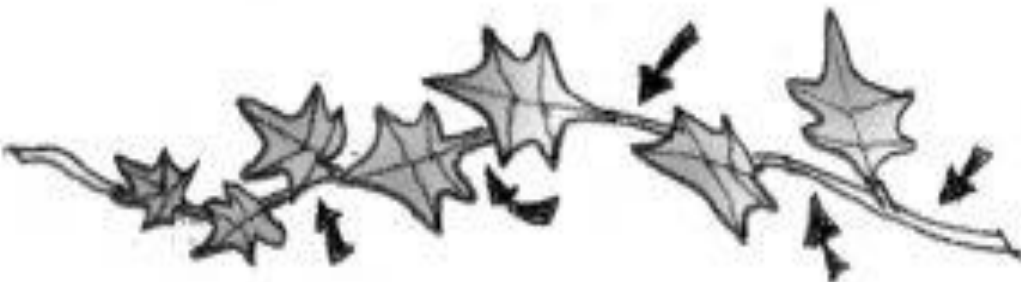
Place stem and leaf cuttings in bright, indirect light. Keep the medium evenly moist while the cuttings are rooting and forming new shoots.

### ***SIMPLE STEM CUTTINGS:***

For herbaceous plants, the simplest and most common cuttings are tip and medial cuttings.

**Tip cuttings:** Cut a 2 to 6-inch piece of stem which includes the terminal (end-most) bud. Make the cut just below a node, where a leaf or set of leaves sprout from the stem. Remove those lower leaves that would touch or be below the planting medium (or in the water, if rooting in water). Dip the stem in rooting hormone if using. Insert the cutting deeply enough into the medium so that at least one node is below the surface and it can stand on its own.

**Medial cuttings:** Make the first cut just above a node, and the second cut just above a node 2 to 6 inches down the stem. Prepare and insert the cutting as you would a tip cutting. Be sure to keep the top of the cutting pointing up.



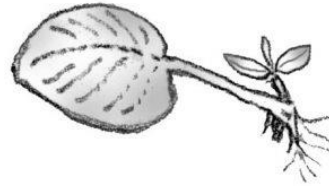
Tip cutting

Medial cuttings

## **LEAF CUTTINGS:**

*Leaf cuttings are used almost exclusively for a few indoor plants. (Leaves of most plants will either produce a few roots but no plant, or just decay.)*

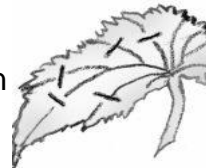
**Whole leaf with petiole (stalk joining the leaf to the stem)** Detach the leaf and  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches of petiole. Insert the lower end of the petiole into the medium. One or more new plants will form at the base of the petiole. The leaf may be severed from the new plants when they have their own roots, and the petiole reused. This technique is useful for African violets and fancy-leaved begonias.



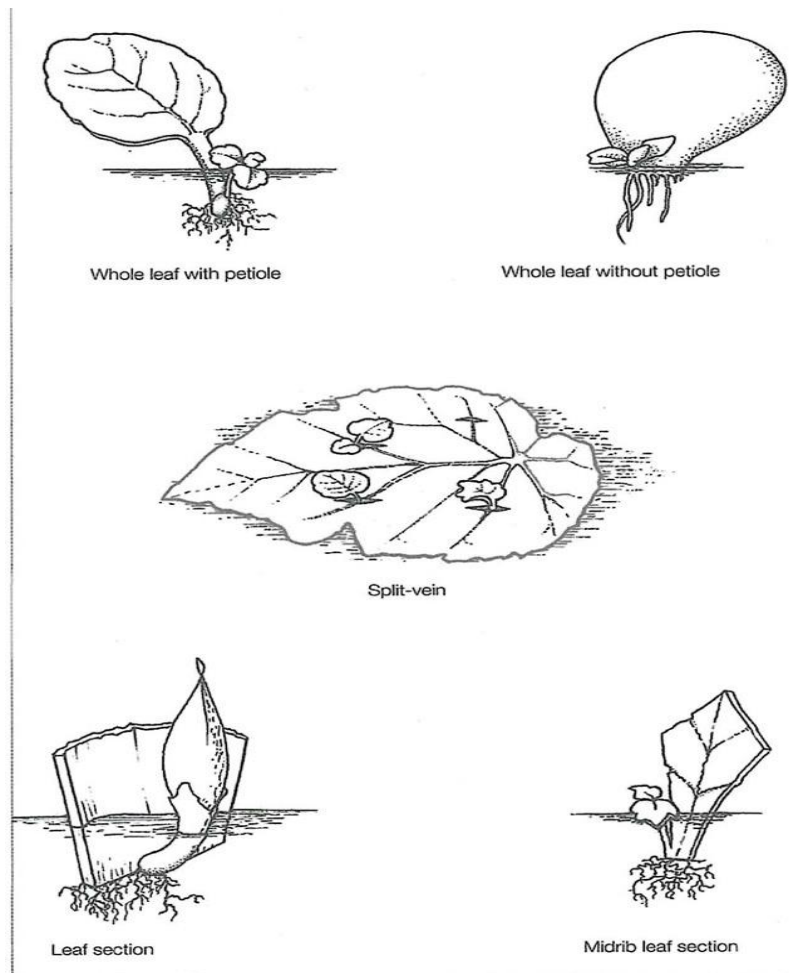
**Whole leaf without petiole:** This is used for plants with sessile leaves (leaves that attach directly to the stem, without a stalk). Insert the cutting vertically into the medium. A new plant will form from the axillary bud (point where the leaf connected to the stem). The leaf may be removed when the new plant has its own roots. This technique can be used on jade plants.



**Split vein:** Detach a leaf from the stock plant. Slit its veins on the lower leaf surface. Lay the cutting, lower side down, on the medium. New plants will form at each cut. If the leaf tends to curl up, hold it in place by covering the margins with the rooting medium. This technique can be used for rex begonias.



**Leaf sections:** This method is frequently used with snake plant and fancy-leaved begonias. Cut begonia leaves into wedges with at least one vein. Lay leaves flat on the medium. A new plant will arise at the vein.



Penn State Extension Master Gardener Manual, Chapter 3: Plant Propagation, Fig. 3-11 “Leaf propagation techniques”, at p. 60.

## ***HARDWOOD CUTTINGS:***

### **When to take hardwood cuttings**

- During dormancy (mid-autumn until late winter) after leaf fall, avoiding periods of severe frost; ideally just after leaf fall or just before bud-burst in spring.

### **How to take hardwood cuttings**

- Select vigorous healthy shoots from current year’s growth that are the diameter of a pencil, removing the soft growth at the tip
- Cut a length of shoot 6-12” long
- Make an angled cut just above a bud at the top; the angled cut will help shed water and will remind you which end is the top

- Count down 3-4 buds and make a straight cut immediately below a set of buds at the bottom

### **How to plant the cuttings:**

- If planting just a few cuttings, they can be planted in a container of 50:50 compost and perlite or coarse grit. Place the cuttings about 2/3 deep into the potting mixture, making sure there are 2-3 buds below the surface and at least one above the surface. Place them around the perimeter of the container at least 2" apart.
- Dipping the bottom end of the cutting into rooting hormone before planting may help some plants, but on others it has no effect.
- Water the cuttings and place in a sheltered area or coldframe, or in a frost-free building.
- Rooting may take 12 weeks to 12 months, depending on the plant and conditions.

### **What plants to take hardwood cuttings from:**

- Many plants can be propagated from hardwood cuttings, including:
  - o Deciduous shrubs, such as: *Deutzia*, *Cornus* (dogwood), *Forsythia*, *Philadelphus* (mock orange), *Ribes* (flowering currant), *Rosa* (rose), *Symphoricarpos* (snowberry), *Spirea* and *Viburnums*.
  - o Climbing plants and vines, such as: *Lonicera* (honeysuckle), *Jasminum*, and *Parthenocissus* (Virginia creeper).
  - o Fruits, such as: gooseberries, currants, quince and mulberry.
  - o Trees, such as: *Platanus* (plane), *Populus* (poplars), black locust and *Salix* (willow).

<https://www.rhs.org.uk/propagation/hardwood-cuttings>

<https://schoolgardening.rhs.org.uk/resources/sequence-card/how-to-take-hardwood-cuttings>



Hardwood cuttings in a pot

### ***EASY LAYERING TECHNIQUES:***

Layering is a propagation method where stems still attached to a parent plant may form roots where they contact a rooting medium, including adjacent garden soil. Once severed from the parent plant, the rooted stem becomes a new plant. Layering is generally a very successful technique because the newly rooting plant does not suffer from water stress and carbohydrate shortage like cuttings do.

Layering can be enhanced by wounding (for example, scraping) one side of the stem.

**Tip layering:** Near the stem to be layered, dig a hole 3-4" deep. Insert the shoot tip and cover it with soil. The tip first grows downward, then bends sharply and grows upward. Roots form at the bend, and the recurved tip becomes a new plant. Cut the tip-layered stem from the parent, and re-plant the new plant in the early spring or late fall. This technique is useful for purple and black raspberries, trailing blackberries.

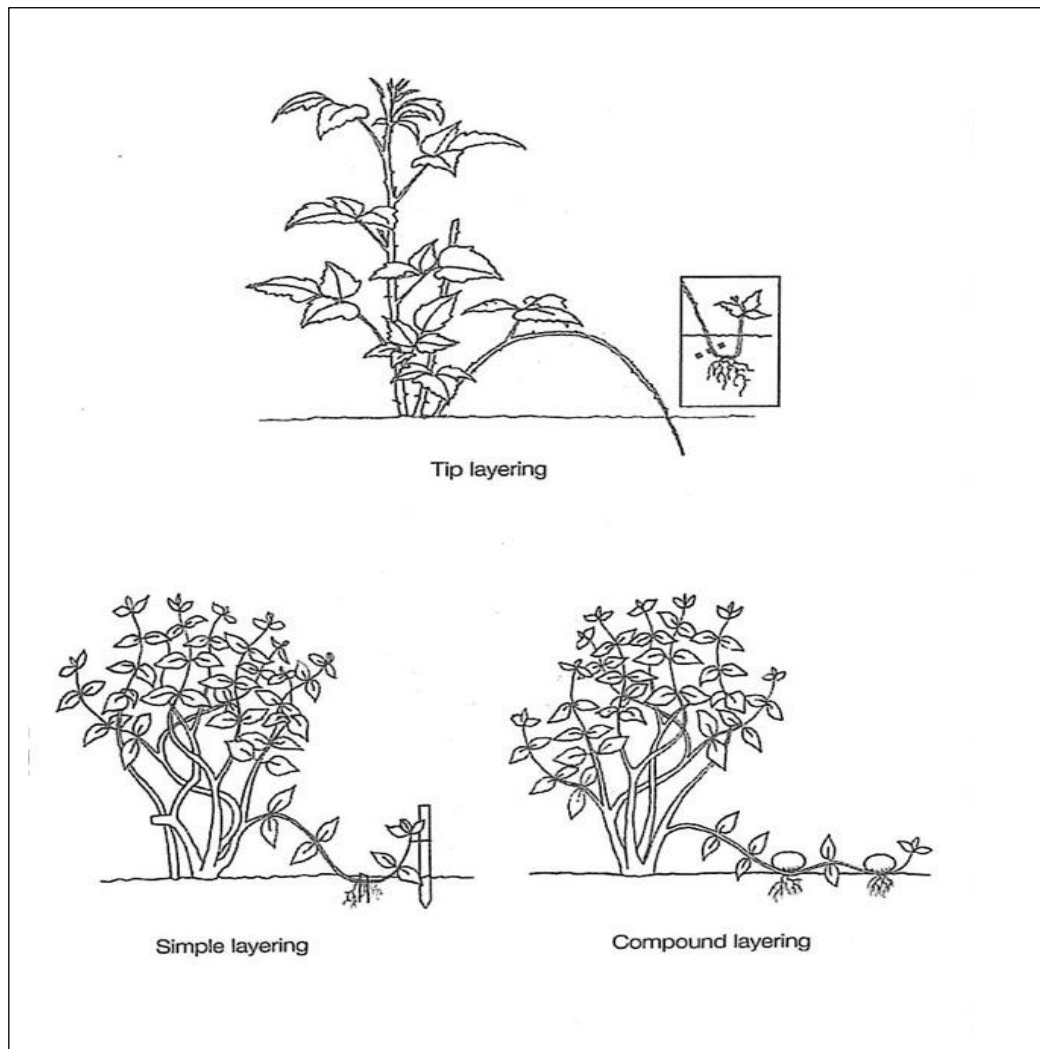
**Simple layering:** Simple layering can be done on most plants with low-growing branches, in early spring using a dormant branch, or in late summer using a mature branch. Bend the stem to be layered to the ground. Wound the underside of that portion of the stem to be buried. Cover that section with soil, leaving the last 6-12" of the stem exposed. Bend the exposed stem tip into a vertical position and stake in place. Periodically check for adequate moisture and for the formation of roots. It may take one

or more seasons before the layer is ready to be removed for transplanting. Examples of plants propagated by simple layering include climbing roses, forsythia, rhododendron, honeysuckle, boxwood, azalea, and wax myrtle.

**Compound layering:** This method works for plants with flexible stems (such as heart-leaf philodendron or pothos). Bend the stem to contact the rooting medium/soil as with simple layering, but alternately cover and expose sections of the stem. Wound the lower side of the stem sections which will be buried.

<https://extension.umaine.edu/gardening/manual/propagation/plant-propagation/>

<https://content.ces.ncsu.edu/plant-propagation-by-layering-instructions-for-the-home-gardener>



Penn State Extension Master Gardener Manual, Chapter 3: Plant Propagation, Fig. 3-17  
“Layering techniques”, at p. 62.

## ***Propagating from plants at the Hort Corner!***

### ***Tradescantia:***

Locate an area where new growth will form, either by locating a node (where leaves are growing from) or looking for an angular bend to the stem that is thicker/has bumps.

Cut about halfway between nodes, making sure your cutting has at least one node. Place cuttings in water, making sure water is deep enough to cover *at least one node* of each cutting.

After the cutting have some healthy root growth (typically three weeks), or when roots are as long as the cutting itself, they can be potted up. Monitor the water level to make sure it is always above the nodes. Every few days, or if the water no longer looks clear, replace with fresh water.

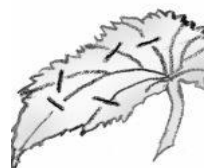
<https://gsc.upenn.edu/propagating-plants-cuttings>



### ***Begonia:***

Begonias can be rooted from stem cuttings, like Coleus. Or, another technique is leaf cuttings.

To make a leaf cutting, remove a leaf from the parent plant and slit the veins on the back of the leaf. Lay the cutting, lower side down, on the rooting medium. New plants will form at each cut. If the leaf tends to curl up, hold it in place by covering the margins with the rooting medium.



### ***Coleus, Pothos & Arrowhead:***

Take a cutting of 3-4" in length, making the cut right above a leaf node (where the leaves sprout from the stem). If coleus cuttings are too large, they will not root as well, or will become lanky, not bushy

Remove the lower leaves, leaving the top set of four leaves. Any part of the cutting that will be below the surface of the water should be free of leaves.

Place the cuttings in a glass jar filled with water. Place the jar in a bright place out of direct sun in a 60 to 75 degree F room. Several cuttings may be placed together in one container.

<https://www.gardengatemagazine.com/articles/how-to/divide/how-to-propagate-coleus/>



### ***Spider plant:***

Spider plants are extremely easy to propagate by using the plant's own runners, or natural layering. The "spiders" or plantlets that follow the flowers can be severed from the parent plant and planted in their own pots once roots have started to develop. (Or, set the plantlet, while still attached to the parent plant, on the surface of a pot with soilless potting medium and allow it to root before severing the stem connecting it to the parent plant. A bent paper clip or piece of wire can be used to hold the plantlet in contact with the soil until it develops roots.)

<https://hort.extension.wisc.edu/articles/spider-plant-chlorophytum-comosum/>



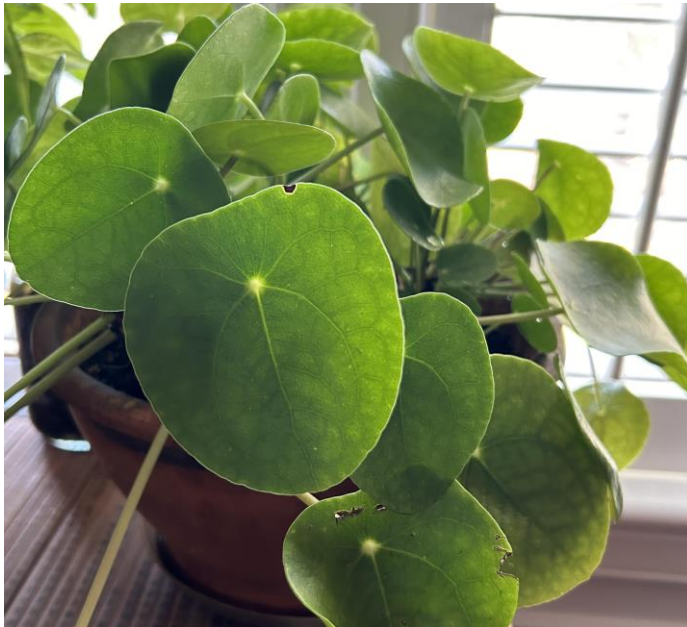
<https://content.ces.ncsu.edu/plant-propagation-by-layering-instructions-for-the-home-gardener>



## ***Pilea peperomioides* (friendship plant)**

- *Propagate by leaf cuttings*: Remove a tiny bit of the parent plant stem when making your leaf cutting. Place base of leaf stalk in water, and in bright, indirect light. Roots should develop in a couple of weeks, followed by a baby plant. When roots are at least an inch long, the rooted cutting can be potted into a well-draining soil mix.
- *Propagate by offshoots*: Separate the offshoots from the parent plant by holding the offshoots by the base of the stem and gently pulling them off. They should 'snap' off with the base of the offshoot completely intact. Because these offshoots have gained their energy from the parent and do not have their own roots, it is best to grow them in water for a short period of time to help them establish roots before transferring them to soil. Submerge the base of the offshoots in the water and the leaves are above. As with leaf cuttings, place in bright, indirect light and pot up when roots have sufficiently developed.
- *Propagate by division*: Dig up the parent plant and remove offshoots keeping roots as intact as possible. Re-pot the offshoots into a well-draining soil mix. (If all of the offshoot's roots break off, simply adopt the water propagation method, above.)

<https://www.thespruce.com/how-to-propagate-pilea-6666265>



### ***Monstera adansonii* (Swiss cheese plant)**

- *Propagate by stem cuttings in water:* Cut the stem just below a healthy leaf node, making sure there is at least one leaf attached. (Remove some leaves if needed to give the stem's nodes more room in the water.) Place cutting in water, and in indirect or dappled sunlight. Roots should start forming in about two weeks, and should be thick enough/long enough (about 2" long; this may take about two months) to be potted into a moist potting medium.
- *Propagate by stem cuttings in soil:* Cut the stem just below a healthy leaf node. Dip the cut stem into rooting hormone and place into a moistened soil mixture containing a mix of standard potting soil with amendments to improve air flow, such as rice hulls or perlite. Potting into into a 4" pot with drainage is ideal to start. Put in bright, indirect light and keep moist.

<https://www.thespruce.com/how-to-propagate-swiss-cheese-plant-8558382>



### ***Snake plant* (*Dracaena trifasciata*, formerly *Sansevieria trifasciata*)**

- *Propagate by leaf cuttings in soil:* Cut snake plant leaves into 2-4" sections. Consistently make the lower cut slanted and the upper cut straight so you can tell which is the top. Insert the cutting vertically into the moist and well-draining potting medium (to include perlite, coarse sand, or vermiculite). Place in bright, indirect light. Roots will form in 3-5 weeks, and in 2-3 months a new plant will appear at the base of the cutting. (Note: if the variegated form is propagated through leaf cuttings, it will produce a normal green shoot.) These and other succulent cuttings will rot if kept too moist.

- *Propagate by leaf cuttings in water:* Cut snake plant leaf near base and place into water, submerging about ¼ of the leaf. Place in bright, indirect light. Though viable, this method may not be preferable due to danger of rot.
- *Propagate by division:* Snake plants are rhizomatous, so identical new plants can be created by digging up the plant and cutting apart the rhizomes. Be sure to keep three leaves attached to the portion of the rhizome you remove. Then pot into moist well-draining potting medium. **This is the method to use if you have a variegated plant and you want the new plants to be variegated also.**

<https://extension.umaine.edu/gardening/manual/propagation/plant-propagation/>

<https://www.uaex.uada.edu/yard-garden/resource-library/plant-week/mother-in-law-tongue.aspx>

<https://content.ces.ncsu.edu/extension-gardener-handbook/13-propagation>



Propagation by leaf cuttings

### Easy Houseplants to Propagate

- Pothos (*Epipremnum aureum*)
- Sansevieria, Snake Plant (*Dracaena trifasciata* syn: *Sansevieria trifasciata*)
- Spider Plant (*Chlorophytum comosum*)
- Zz Plant (*Zamioculcas zamiifolia*)
- Chinese Money Plant (*Pilea peperomioides*)
- Tradescantia, Inch plant (*Tradescantia* spp.)
- Arrowhead plant (*Syngonium podophyllum*)
- Jade Plant (*Crassula ovata*)
- Heartleaf Philodendron (*Philodendron hederaceum*)
- English Ivy (*Hedera helix*)
- Mother Of Thousands (*Bryophyllum daigremontianum*)
- Aloe (*Aloe vera*)
- Coleus (*Coleus scutellarioides*)
- African Violet (*Saintpaulia ionantha*)

<https://yardandgarden.extension.iastate.edu/how-to/propagating-houseplants#best>

This website has lists of propagation methods by plant species:

<https://yardandgarden.extension.iastate.edu/how-to/propagating-houseplants#foliage>