

### Plant Propagation Using Cuttings

Many gardeners want to increase their supply of plants, and in this economic climate, the most cost effective way is to use the plants you have, or to take cuttings from plants you admire from the gardens of other gardeners. Plants also make a cost effective gift for friends and neighbors. Any portion of a plant constitutes a potential cutting. There are three categories; leaf, stem and root cuttings.

1. **LEAF CUTTINGS:** Commonly limited to houseplants (African Violets, snake plants, etc.), not often used for woody plants. Cuttings consist of leaf blade, leaf and stem, or leaf, stem and axillary bud. These typically do not require use of rooting hormones, however those woody examples such as ivy will benefit from use of rooting hormones.
2. **STEM CUTTINGS:** Common for woody plant propagation. Can be divided into 3-4 types. Using stem cuttings to propagate requires some consideration of plants, timing, selection and collection of materials, preparing and processing cuttings, and after care.
  - a. **Softwood:** Softwood or tip cuttings are taken in the spring, using the fast growing sappy tips of new shoots. Softwood tissue is easily bruised with your fingernail. It can be recognized by a gradation of leaf size, with young end leaves undeveloped and full-sized leaves lower on the stem. If the tip bends without breaking (rubbery), it is likely too young to use. If the tip snaps while bending, it is optimal for use. Softwood cuttings typically root easily.
    - i. **Plants:** Plants that may be considered are Forsythia, Hydrangea, Weigela and Philadelphus (mock orange).
    - ii. **Timing:** Although Softwood cuttings are thought of as spring cuttings, timing will depend upon many factors including the species and growing conditions. Softwood period may be thought of as spring through June, however some plants such as Weigela may produce softwood well into the summer.
    - iii. **Collection:** Cuttings can be easily snapped off and will wilt easily after removing. Tips should feel very soft. Farther down, the stems should be pliable but the tissue not yield to a squeeze. At the lowest part of the soft wood, where it sprouted from its bud, the growth should be firm and just starting to darken in color. Make your cut just above this point, where the new growth began. Select cuttings 2 to 5 inches in length. Although they can be snapped off, take cuttings using a knife or shears to prevent damage to the cutting. Keep cuttings cool and moist. Take cuttings in the cool of the morning and immediately place into plastic bag or immerse in water to prevent wilt. They may be placed in a refrigerator for up to a week if kept moist in a plastic bag.: Cuttings can be easily snapped off and will wilt easily after removing. Tips should feel very soft. Farther down, the stems should be pliable but the tissue not yield to a squeeze. At the lowest part of the soft wood, where it sprouted from its bud, the growth should be firm and just starting to darken in color. Make your cut just above this point, where the new growth began. Select cuttings 2 to 5 inches in length. Although they can be snapped off, take cuttings using a knife or shears to prevent damage to the cutting. Keep cuttings cool and moist. Take cuttings in the cool of the

- morning and immediately place into plastic bag or immerse in water to prevent wilt. They may be placed in a refrigerator for up to a week if kept moist in a plastic bag.
- iv. **Processing:** Trim off the growing tip. This diverts growth hormones to the base of the cutting and aids in rooting. Trim off leaves along the portion of the cutting that will be beneath the potting mix. It sometimes helps to trim remaining leaves down in size to reduce leaf surface and to prevent excessive moisture loss during rooting. Use of rooting hormone with Softwood cuttings is not critical, however for more difficult plants treatment may benefit. Try both without hormone and with low concentration liquid hormone. Prepare growing medium using your favorite free-draining soil-less mix (peat-pearlite). This should be prepared in advance to minimize exposure of cuttings to drying conditions.
  - v. **Aftercare:** Prevent drying while rooting takes place by placing in plastic tent, misting or use of a cloche. Spray with a fungicide weekly. Rooting should occur within 6-10 weeks or earlier for some species.
- b. **Semi-hardwood (Greenwood):** When spring has passed and no new growth is being made cuttings are called Semi- Hardwood. Semi-hardwood cuttings are reasonably firm and leaves that were produced in spring have matured.
- i. **Plants:** Often used with broad-leafed evergreens such as rhododendron, photinia, osmanthus, holly, magnolia, Weigela and mock orange.
  - ii. **Timing:** These cuttings are taken in mid summer (mid-July to August)
  - iii. **Collection:** Cutting should be 3 to 6 inches long. If the shoot is long enough, 2-3 cuttings may be taken from the same stem. Because shoots are no longer actively growing, cuttings will be less prone to wilt. However, it is still important to prevent drying of cuttings taken.
  - iv. **Processing:** As before, remove leaves and side branches on the cutting that will be below the surface of your rooting medium. Trim out growing tip. Again it may help to trim remaining leaves down in size to reduce leaf surface and to prevent excessive moisture loss during rooting. A shallow cut or wound along the bottom ½ inch of the cutting may prove to be beneficial and rooting hormone treatment is usually necessary.
  - v. **Aftercare:** Rooting time varies from 4-6 weeks. Prevent drying while rooting takes place, by placing in a plastic tent, misting or use of a cloche. Spray with a fungicide weekly. Keep cuttings frost free. Bottom heat of 65-70°F will aid with rooting.
- c. **Hardwood (dormant):** These are the easiest of the cuttings to do. These cuttings are fully mature and leaves have been lost (except for broadleaf and needled evergreen).
- i. **Plants:** Often used for poplars, willows, Ribes (currant), and Cornus (dogwood), but also Weigela and mock orange.
  - ii. **Timing:** Cuttings 4 to 8 inches in length should be collected from October to November and can at times be collected successfully in late winter or early spring. The limiting factor here is the time it takes to develop a callus at the site of the cutting sufficient to result in root development prior to spring leaf development. Moisture loss is not a significant issue, however it is still important to avoid unnecessary drying between collection and processing.
  - iii. **Processing:** Trim off tip and any adventitious side shoots or branches. Remove all leaf buds that will be below the surface of the rooting medium after planting. Use of a liquid or powdered rooting hormone is usually required. Species that root easily may be planted directly into pots or outside beds. Harder to root varieties should first be bundled and placed into refrigerator or buried in sand in a cold frame to induce callusing and root development at the root hormone treated end. By

- keeping the entire cutting cold and free of light, leaf development is delayed until after root development. If cuttings warm in the spring prior to root development, they will begin to leaf and shoot ahead of root development and the plants will be lost. Regarding hormone treatment, except for hardwood cuttings it is best to use liquid treatments. For hardwood cuttings, powdered formulas are effective and also benefit by containing fungicides which will increase over winter survival.
- iv. **Aftercare:** Hardwood cuttings require little or no aftercare. Most important is to remember that these cuttings will succumb to harsh winter exposures. Do what you can to prevent extreme cold, excessive moisture or drying. If you have the facilities available, hold them throughout the winter in a cold frame or unheated greenhouse. All cuttings will be “tender” until after their first year growing under natural conditions (the first winter is the winter to baby your cuttings).

### 3. Root Cuttings or Divisions

- a. **Plants:** Perennials such as Acanthus (bear’s breeches), rhubarb, phlox, sassafras, peonies and others.
- b. **Timing:** Most root cuttings are taken in December through March when plants are dormant, although some species may be taken year around.
- c. **Collection:** Lift the entire plant. Wash off soil. Remove the roots to be used for propagation. For larger plants, dig a small trench close to the plant to expose a few roots that can be collected and prepared as cuttings.
- d. **Processing:**
- i. **Thick Fleshy Root Cuttings (bear’s breeches, peonies):** Pull apart or cut into sections along any natural lines of division, taking care not to damage roots. Cut away any damaged areas with a sharp knife. If damaged, treat with a fungicide to prevent rot. The larger the cutting, the less time to regenerate a large plant. Immediately replant in free-draining potting mix, avoiding drying of the roots.
  - ii. **Thin Fibrous Root Cuttings (phlox):** These have roots of only several millimeters in diameter. These cuttings have no top or bottom. They are not inserted into pots, but are scattered over the surface of a tray or pot (alignment is not important).
  - iii. **Aftercare:** Keep plant material moist, but not wet. Protect young plants from harsh conditions until new root growth is well established.

Enjoy the delight of your friends when you give them rooted cuttings from your special treasures!

## Resources

*Plant Propagation: The Fully Illustrated Plant-by-Plant Manual of Practical Techniques*, Alan Toogood (Editor in chief), DK Publishing, Inc. 1999

*The Reference Manual of Woody Plant Propagation, From Seed to Tissue Culture*, Second Edition, Dr. Michael A. Dirr and Dr. Charles W. Heuser, Jr. Timber Press, Inc. 2006.

[Plant Propagation by Stem Cuttings: Instructions for the Home Gardener](#), 1/99 HIL-8702 by Erv Evans, Extension Associate, Frank A. Blazich, Professor, Department of Horticultural Science, North Carolina State University.

[Methods of Plant Propagation](#), Gardeners Corner.