

# Propagation from Stem Cuttings

John Bowen, Buncombe County Master Gardener Volunteer  
Gardening in the Mountains  
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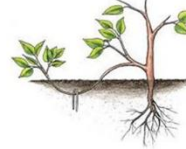


## Stem propagation

- rooting stem cuttings
- layering with stems in soil



SIMPLE LAYERING



- air-layering: wounding & wrapping

## Asexual propagation – other techniques

- Leaf propagation (e.g. African violets, begonias)
- Root divisions
- Crown divisions or offsets (“digging plants”)
- Grafting, budding, stooling

## Rooting stem cuttings

- Softwood or semi-hard wood, greenwood, actively growing.
- Hardwood cuttings, dormant wood, usually over winter.



## The greenwood rooting process

1. Cut a stem
2. Dip in rooting hormone
3. Stick into rooting medium
4. Cover and maintain humidity
5. Wait patiently for roots
6. Pot up
7. Plant out

## Easy to Root

Easy to Root		
Petunias	Salvias and Sages	Coleus
Most herbaceous groundcovers	Begonias (wax and tuberous)	New Guinea Impatiens
Caryopteris (Sirea)	Upright Fuchsia	Rosemary
Roses	Red- and Yellow-twig dogwood	Hydrangea

## Don't propagate patented plants

Hydrangea Fire and Ice  
Hydrangea paniculata 'Wim's Red' PP#26,005

Bigger-than-life flowerheads!

Coprosma repens 'Pacific Sunset' PPAF

Pacific Sunset Mirror Plant



Hydrangea Invincibelle Wee White®  
Hydrangea arborescens 'NCHA5'

Sheer white flowers mature to gentle yet appealing shades of pink and green.

- Genus: Hydrangea
- Species: arborescens
- Variety: 'NCHA5'

## Where do roots form?



In the internodes



At the nodes



At the cut ends

## Rooting Hormones

### IBA powder

- Hormex, Miracle Gro, Garden-Safe, Hormodin, etc.
- Various strengths
- Inexpensive
- Convenient and ready to use



## ROOTING POWDER GUIDE

### HORMEX ROOTING POWDER #1

EASY TO ROOT PLANT VARIETIES  
IBA - 0.1% (1,000 ppm)

### HORMEX ROOTING POWDER #3

MODERATELY EASY TO ROOT PLANTS  
IBA - 0.3% (3,000 ppm)

### HORMEX ROOTING POWDER #8

MODERATELY DIFFICULT TO ROOT PLANTS  
IBA - 0.8% (8,000 ppm)

### HORMEX ROOTING POWDER #16

DIFFICULT TO ROOT WOODY PLANTS  
IBA - 1.6% (16,000 ppm) \*strong

### HORMEX ROOTING POWDER #30

VERY DIFFICULT TO ROOT WOODY PLANTS  
IBA - 3.0% (30,000 ppm) \*very strong



## Rooting Hormones

### Clonex

- IBA Gel with vitamins and minerals
- Single use packets and larger bottles



## Rooting Hormones



### Dip 'n Grow

- IBA and NAA solution
- Dilute to working concentration

## Rooting Hormones

### Other options

- ~~Honey~~
- ~~Cinnamon~~
- Stick roses in ~~potatoes~~
- ~~Aspirin~~
- Willow stems in water **sometimes**

## Rooting in Water?

- Coleus
- Salvia
- Mint
- Angel Wing Begonia
- Red Twig Dogwood
- *Fuschia triphyla*



## Propagation media

Perlite : coconut coir 50:50 (Coconut coir can be purchased as loose bag or compressed brick. Use a name brand from a reputable supplier.)

Perlite : peat 50:50

Perlite alone (medium or smaller mesh)

Builder's sand (Coarse sand, not play sand. Locally, might be called all-purpose sand.)

Pine fines (Asheville Mulch Yard or Daddy Pete's Soil Conditioner)

## No Fertilizer

## Watering

Plants aren't transpiring and have no roots, so only maintain humidity. You should see condensation on the chamber or lid or dome.

Media should be damp. If you can wring water out of it, it's too wet. If using peat or coir, soak it to saturation, mix dry perlite with saturated peat/coir, and it should be about right.

Don't water again unless the media feels dry. Remember, you're just maintaining humidity, not watering plants.

## Rooting Chambers

1. Media in Solo 10 oz (TP10). Cut two openings on bottom edge.

Cap with Solo 9 oz (TP9)



For tall cuttings, cover with 12 oz Solo cup or a 1 liter beverage bottle with bottom cut out. Take bottle lid on/off as needed for ventilation. One liter bottle will also fit inside many 4" square pots. I use those when rooting very tall cuttings, like roses.

Or

2. Place Solo 10 oz in a clear plastic bin. Lid need not be clear as long as good light comes through sides.
3. 1020 trays with 36 cell inserts and clear plastic cover.
4. Plastic bins with lids and drainage holes. Place media directly in bin.

### Transition out of rooting mode. Some possible steps.

- A. Healthy tops, no mold. Go to 4" pot.
  - a. Indoors, just set under lights. Cover if roots are scanty. Move outdoors in shade in a week or so, then transition to sun.
  - b. Outdoors, pot in 4" and cover for a few days in shade, then remove cover. Re-cover if wilting. Transition to sun.
- B. Not healthy tops. Remove cover but leave in Solo Cup. Let top dry out for several days. Then pot up into 4".
- C. Fertilize with half strength in 4" if your potting media doesn't have fertilizer.
- D. When 4" is root-filled, usually move to gallon. Or if strong, plant into soil.

### Overwinter

**Stabilize.** If they are hardy, bury them in chopped leaves, mulch or pine fines. Better in gallons than 4". But better in 4" than rushed into gallons. Should be fine over winter. Put on the north side. Or under a bush. Watch out for squirrels!

**Tender perennials like petunias and impatiens will be indoors.**

**Hardwood Cuttings ... this?**



Photo credit: Master Gardener of the University of North Carolina

**Hardwood Cuttings ... or this?**



Photo credit: Master Gardener of the University of North Carolina

**Hardwood Cuttings... or this?**



Photo credit: Master Gardener of the University of North Carolina

**Shrubs and small trees**

Viburnum, Hydrangea, Deutzia, Rose, Spirea, Rose of Sharon, Forsythia, Dogwood, Butterfly bush...

1. **When:** Dormancy—December
2. **What** to stick:
  - A. Younger plants do better
  - B. This year's growth
  - C. 3-node lengths, pencil diameter
3. **Media:** Same as greenwood or pine fines:perlite 50:50.
4. **Cutting**
  - A. 3-node pieces. Above and below nodes. Cut top to at angle.
5. **Stick** in pots.
  - A. Hormone. Use dibble. 2 nodes under, 1 above.
6. **Where to place**—2 schools
  - A. Outdoors in shade or semi-sun. Let it rain and freeze. Watch out for critters.
  - B. Indoors to protect against hard freezing. Unheated garage. Moist, not wet. Move into light when leaves appear.
7. **How long:**
  - A. Leaves should appear in the spring, but plants may take a full year to grow strong. I try to pot my cuttings up into gallons in mid summer, if possible.

## Help or Questions?

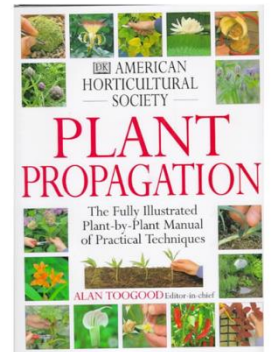
**Garden Helpline**  
**828-250-4878**  
**[buncombemg@gmail.com](mailto:buncombemg@gmail.com)**

**Mon & Wed 10 am to 2 pm**  
**Friday 10 am to noon**

## References

American Horticultural Society.  
*Plant Propagation* by Alan Toogood

Other References in the Handout



## General References

American Horticultural Society. *Plant Propagation* by Alan Toogood

*North Carolina Extension Gardener Handbook.*

Chapter 13 - Propagation

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

<https://research.wsulibs.wsu.edu/xmlui/bitstream/handle/2376/7101/pnw152.pdf?sequence=1&isAllowed=yhttps://hormex.com/pages/hormex-rooting-powder-strength-plant-list>

<https://empressofdirt.net/plant-cuttings-calendar/>

<https://aggie-horticulture.tamu.edu/ornamental/a-reference-guide-to-plant-care-handling-and-merchandising/propagating-foliage-flowering-plants/>

Mike Kincaid <https://propagateplantslikeapro.com/>

Facebook group: *I Love Plant Propagation*

## Hardwood cuttings:

<https://www.rhs.org.uk/advice/profile?pid=387>

<https://hgic.clemson.edu/factsheet/hardwood-cuttings-for-shrub-tree-propagation/>

<https://empressofdirt.net/grow-hardwood-cuttings/>