



CNPS Santa Cruz County Chapter

# Propagation by Cuttings

In July 2013, **Leonel Morales**, propagator in charge of cuttings at Suncrest Nurseries, gave up a Sunday morning to teach our propagation group how to propagate by cuttings. This document contains the training and tips that Leonel shared. We are so grateful for his generosity.

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## Hygiene



Keep tools clean and sharp

Keep it clean! A professional nursery knows the value of hygiene. Infection by insects, fungus, and bacteria can severely impact production.

If you have a metal table, wipe it down with a dilute bleach solution before you start.

Take care of clippers and scissors—keep them clean and sharp. Spray rubbing alcohol on the blades between batches of cutting material, in case of bacterial infections.

It's a good idea to wear surgical gloves. Rooting hormone can be absorbed through your skin.

## Types of Cuttings

- **Softwood:** from flexible green growing material
- **Semi-ripe:** from firmer but still flexible green stems
- **Hardwood:** from stiffer, woody stems

In controlled nursery growing conditions, soft tips are the very best cutting material for most plants. (At home, you may want to use material that is not as soft.) Soft cuttings generally root in three to four weeks. (Hard wood cuttings take up to a year and are prepared in a different way.)



Types of cuttings.  
Clockwise from top right:  
tip, second, hammers, heel

### Types of Softwood Cuttings

- **Tips:** the growing end of the stem and two or three nodes
- **Seconds:** Stem cutting(s) below the tip, comprising two to four nodes.
- **Heels:** Cuttings from the base of a side stem, including a little main stem material.
- **Hammers:** For plants with opposite leaves like salvias and garryas - you can get two cuttings by splitting a stem cutting in two—the side shoots grow into separate cuttings. Good if you are short of material. They tend also to make bushier plants.

## Choosing Cutting Material



Pruning material from mature plant

As a rule, volunteers who know how to prune plants take material for cuttings from mature plants in our nursery stock. You can also take “cuttings from cuttings.” When cuttings grow, it's common to pinch them to encourage bushy plants. You can use that material to make more cuttings.

**NOTE!** Do not bring in material from outside the nursery, unless you previously discussed this with a group leader. Such material could infect nursery stock and cause great damage. Any such material should be carefully inspected.

Check for disease and infestations in the cutting material. If aphids, just dunk for three minutes in soapy water and rinse. If fungus—do not touch! You'll infect the other material; after you're done with other cuttings, bag and throw in the trash.

## Making Cuttings

You only need to understand a few basic things to make great cuttings. The most important is to recognize nodes.

**What is a node?** A node is the place on the stem where leaves and shoots grow. It's generally a bit swollen, and generally there are actually leaves growing from it.

Choose the parts of the cutting material that have good form—straight, not twisted. However, if you only have twisty material, use it and later prune for form.

You don't need to keep cuttings in water. They can stay out for up to a day—not in the sun of course.

**To form the bottom of the cutting, cut below a node,** not too close to the node. Leave no more than 1/4 inch of stem below the node.

**To form the top of a second or heel cutting, cut above a node,** not too close to the node. Leave no more than 1/4 inch of stem above the node.

**To form the bottom of a heel cutting,** tear or cut the side stem from the main stem so that a little of the main stem remains attached. Trim off excess.

(Some plants, notably salvias, can grow without a bottom node if cuttings are made in spring but we never need to do that as we have plenty of material.)

**Cut off any buds or fruits.** Sometimes it's a good idea to wait a few days to do this because the stem of the buds or fruits may grow a little, making it easier to cut off buds and fruits without damaging the rest of the cutting.

**Cut off lower leaves using scissors.** Do not strip them down with your finger. Damage invites fungus. Cut bottom node leaves and maybe middle node if there are three nodes to a cutting.

If a plant has been stressed, or if it has grown lanky and soft, tip cuttings may not work well. At home, if you don't have ideal conditions, tip cuttings may be too soft to survive.

Some plants have nodes that are so close together it is difficult to know how to prepare the cutting. For example, *Artemisia pycnocephalla*, and some salvias. However the principle is the same, even if the appearance is different.

### Dip in Rooting Hormone

Put a small amount of rooting hormone in a shallow plastic container.

Dip the very end of the cutting in the hormone powder. We use Hormex.

As a general rule, use Hormex #3 for soft material, and #8 for woodier material, as well as certain plants that are difficult to root (you have to find this out from the group leader, books, on-line resources, and so on. For example the mallows, *Malacothamnus*, usually get #8).

Sometimes Hormex #3 is used for harder cuttings. This causes them to root more slowly, which can be useful to get more robust cuttings from stressed material.



Cut below the node to make the bottom of the cutting



Cut above the node to make the top of the cutting (except tip cuttings)



Some nodes are so close together it's hard to see them



But the principle is always the same

## Sticking Cuttings in the Trays (Flats)



A tray of healthy cuttings

Cuttings are “stuck” into trays. Then they grow roots in the greenhouse or shade house. A propagation medium provides support, aeration, and moisture while the plant develops. The medium is usually composed mainly of peat, perlite, and vermiculite.

At Suncrest Nurseries, we are lucky. We use already-prepared cutting trays, filled to the brim with media and packed firmly.

### Mist or No Mist—Keep Like Cuttings Together

We are also grateful that Suncrest nursery staff look after our cuttings, along with their own cuttings. Let’s make it easy for them by keeping like cuttings together.

**Don’t mix cuttings with different needs in one flat.** For example, cuttings of some types of plants need mist and cuttings of other types of plants don’t. Some grow faster than others. Keep them separate.

In general, riparian plants, those with soft leaves, are given mist. Chaparral plants, those with hard or scaled or hairy leaves, do not require mist.

Time of year matters: Chaparral shrubs such as manzanita, ceanothus, toyon and also epilobium grow better if propagated from cuttings in winter and placed in the shade house. If cuttings of those plants are made in summer, however, they might need mist because of temperature changes.

It’s important for the temperature to remain fairly steady - even a difference of 10 degrees Fahrenheit in a day can cause damage. If it gets hot, nursery staff might increase mist.

Hairy plants never get mist because the moisture retained by the hairs can lead to fungal infection.

Examples of plants that usually get mist: Spirea, philadelphus, cornus (manzanita in summer but not winter), symphocarpos, lonicera, holodiscus (but better from seed), rosa

Examples of plants that usually don’t get mist: epilobium, salvia, mimulus, artemisia, penstemon, solanum, keckiella, malacothamnus



Oh dear - dead material. Remove— carefully



Move flats carefully - squeeze sides to keep the medium packed

### Sticking Cuttings

Nursery propagators cut a narrow trench for each row of cuttings to drop into using special blades made at the nursery. Then close up the trench around the cuttings. You can instead poke a hole with a pencil or similar, drop the cutting in, then close and firm the medium around the cuttings..

When sticking the cuttings, don’t push the cuttings in—especially soft cuttings. Don’t cover the first pair of leaves. How deep to stick the cutting varies by plant. The cutting has to be stable, not wobbly in the flat.

Close the medium firmly around the cutting. Roots don’t grow if there are air pockets. And you don’t want the to get knocked askew when watered.



NOT like this! See the cracks opening?

## Watering-in the Cuttings and Placing on Tables

Water the cuttings in twice. The second watering ensures that any extra hormone is washed off the base of the cutting. Too much hormone can cause burning.

- Water when you just put them in to ensure there are no air pockets and then firm in any wobbly cuttings.
- Water again after they are placed on the table where they will grow. Again, firm in any ones that got knocked askew - very carefully.

**NOTE!** Water *gently* and from *all angles* not just one angle. Water gently.

## Caring for Cuttings

The nursery has greenhouse some tables that get mist and some that don't get mist. The propagation group leaders know which are which.

Botrytis, grey fungus, as well as other types of fungal infections, can spread rapidly given moisture and warmth.

Nursery staff monitor all cutting flats daily and make adjustments to the watering or position of the flats as needed.

At each propagation group visit someone with nimble fingers should check cutting flats in the greenhouse or shade house and carefully remove any dead leaves. We should also pinch and prune as needed for better growth. You can also make cuttings from the tip prunings. Take great care not to disturb or damage the cuttings..

## Delaying Tactics

Many plants take three to four weeks to root. However, you can leave many types of cuttings in the trays an extra three to four weeks after they have rooted.

Leaving plants in cutting trays can be useful. It delays growth so that vigorous plants are ready for selling at plant sale time. Maybe even with flowers on them!

Some plants, however, must be transplanted when they are ready. Poppy family plants such as *Dendromecon* (bush poppies) and *Romneya coulteri* (Matilija poppy), for example, have soft easily-broken roots.

Another delaying tactic learned from Jeff Rosendale is to keep plants in their 2" liners for longer. Keep them in their earlier stages before potting on, seems to be the general idea.



Water gently from one direction...



Then another

## Transplanting the Cuttings into Liners (Small Pots)

Cuttings can root in as little as three weeks. Sometimes it takes a lot longer.



Cuttings can have lots of roots. Scoop under carefully.



Healthy roots



Hold the cutting, add media around it, up to the root crown



Another way: fill diagonally then put rooted cutting in and top up.

### Supplies

**Media** There is always enough media on the table. Sometimes it is dry. Find the hose that is in the corner of the room and use it to wet down the media thoroughly. One person can hose and another use one of the hand-hoes to mix up the media until enough of it gets wet.

**Liners** Get enough liners to transplant the cuttings, and seed flats to contain the liners.

**Labels and pencils** Each liner needs its own label.

**Flat knife for lifting** Optional if you want to use your hands.

**Gloves** Optional, but many people do like to use the provided surgical gloves or their own gardening gloves.

### Method

**Check for roots:** A cutting has roots if a gentle tug on the cutting meets with some resistance. You can also gently lift a cutting out to check for roots.

**Replant unrooted cuttings:** If a cutting is alive but has no roots (or very small roots), carefully pop it back in the flat and firm it in, taking care not to damage it.

**Lift and separate:** Lift the rooted cuttings carefully from the flats. You can use a flat knife or gently scoop under the media using your fingers to lift out the cuttings. Gently separate the roots and untangle cuttings if they have matted together.

**Trim roots if too long:** If a cutting has very long roots, trim them so they fit the liner. If roots are very bushy, the cutting may need a bigger pot. Check with the session leader.

**Pot the cutting:** People use different ways to settle potting medium around the roots. The general idea is to spread the roots deep into the pot so they can grow into the medium. A couple ways are described below.

**Note:** Pot the cutting so the potting mix comes to the same part of the stem that it did when the cutting was in the flat. You can usually see a difference in color or texture.

**Potting Method 1:** Hold the cutting in the liner where it will sit when potted. Drop media around it, ensuring the roots are spread deep and wide and fill to 1/4 inch of the top. Tamp down the sides so it's fairly firm.

**Potting Method 2** Fill the liner diagonally with the potting medium. Lay the cutting on the potting medium in the position it will be when potted. Add more potting mix to fill up the pot. Straighten up and center the cutting, adding a little more medium as needed. Tamp down the sides so it's fairly firm, filling to 1/4 inch of the top.

**Prune the cutting as needed.** Trim any leggy stems so the cutting will grow in a balanced shape. Remove buds and flowers. The plant energy needs to go into stems and leaves at first.

**Line up the liners in a seed flat.** Be careful not to mix up different species or varieties. Flats are not square. Check with the session leader whether to run the rows down the long or the short side.

**Count the cuttings and update the list:** The session leader has a clipboard with the list of plants for the session. Find the species you potted and write the number of cuttings you potted. Another group member adds this information to a spreadsheet so we can measure success and also know how many plants we are growing.

**Write a label for each pot:** Carefully copy the label used in the cutting flat. If you can't read the label or are not sure if it's correct, ask a session leader. The Jepson manual is available for reference. Put the labels to the front, writing facing out.



**Trim flowers off**



**What to do with flowers!**

ADD PHOTO OF NICE TRAY  
OF LINERS



**A label for every pot!**



**Labels to the front, writing out**