

Propagation Principles and Reminders



Best practices for propagation

Prior to arrival

Preparation is key as cuttings degrade quickly upon receipt.

Make sure your propagation zone is at the proper temperature and that your under bench or floor heating system is working. Clean and sterilize benches, floors, coolers, sticking lines and tools.

Check nozzles and verify even misting in all areas propagation trays will be placed. Use of finer nozzles will create the optimal environment (turgid cuttings without excess media moisture).

Check cooler temps (consider a thermometer that reads temperature and humidity (high humidity is key) to stay in check)

- Tropical and chill sensitive (55-65°F/13-18°C)
- Temperate species (40-55°F/5-13°C)
- If you don't have 2 coolers, use 45-55°F (7-13°C) and keep the following species out of the cooler (Ipomoea, portulaca)



Upon arrival, get the boxes into the cooler ASAP. It is best to open the boxes allowing some built up ethylene to escape, this is a great time to take arrival temperatures. If possible remove the cutting bags from the boxes to allow any built up heat to escape. It is important to store cuttings waiting to be stuck in a cooler that is not only at the proper temp, but also provides 80-95% relative humidity. Certain items perform better if given a recovery period in the cooler (geranium, poinsettia, euphorbia, lobularia to name a few). Immediate sticking of any cutting if it arrives stressed may be counterproductive, rather place them in the cooler to recover for a few hours or overnight.



Know your sticking order/priority

Group A - stick day of arrival

Crossandra
Euphorbia
Heliotrope
Hybrid Begonia
Lantana
Lobularia
Purslane
Ipomoea (especially chartreuse)
Thunbergia

Group B

Begonia (hiemalis)
Coleus
Dahlia
Evolvulus
Fuchsia
Geranium
Lavandula
Osteospermum

Geranium (Tag color ETH)
White tops —stick first
Yellow tops —stick middle
Orange tops —stick last

Group C

Angelonia
Bidens
Calibrachoa
Cuphea
New Guinea Impatiens
Petunia
Phlox
Salvia
Scaevola
Verbena

Group D

Gaura
Hedera
Sanvitalia
Vinca major

Mist group pairing

Dry (could consider cloth (remay) cover)

Cuphea
Euphorbia (chamaesyce)
Evolvulus
Geranium—NO COVER
Heliotrope
Hybrid Begonia
Lantana
Lavender
Portulaca
All silver/gray (fuzzy) foliage items

Medium (speed to root)

Angelonia
Begonia (hiemalis)
Calibrachoa
Fuchsia
Osteospermum
Scaevola

Fast (speed to root)

Bacopa
Coleus
Dahlia
Ipomoea
New Guinea Impatiens
Petunia
Salvia
Verbena

*those not listed can cross over between medium and fast group.

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Sticking Guidelines

Only bring out a small amount of cuttings from the cooler at a time to reduce the possibility of dehydration and heating up.

Dibble holes are used to simplify the sticking process. If this method is chosen make sure the dibble hole is the proper width (not too wide) and not too deep. The cutting should touch the media, especially the bottom of the cutting.

Once the cuttings are stuck, be sure to properly water in the cuttings to "seat" them in (eliminate excess air around the cutting).

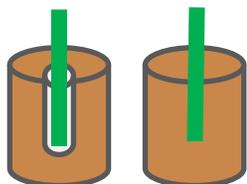
When sticking hiemalis begonia be sure to face the leaves all the same direction so you don't cover growing tips.

Take your stuck trays as quickly as possible to the propagation zone so the cuttings don't dry out. Any drying can cause uneven rooting or even cutting death. Could consider the use of capsil (2-4oz/100 gal to improve mist coverage and rehydration of cuttings).

Use of rooting hormone can speed rooting and improve uniformity, the easiest application is a coarse spray of liquid IBA following sticking, apply enough so it moves down the stem toward the base evenly on all sides. Also apply from both sides of the bench or cart so the whole stem is covered.

Consider a preventative fungicide application in the first few days.

If your geraniums arrive stressed and to avoid leaf yellowing, consider using capsil when the trays are placed in propagation to aid in rehydration. Then use a tank mix of K-IBA and Fascination (or Fresco) to reduce leaf yellowing (2.0-2.5ppm GA4/7-BA + 200-400ppm K-IBA) applied 2-4 days after stick.



Ideal Propagation Conditions

Provide enough mist to maintain cuttings turgor, but don't saturate the soil. You will need less mist on a cloudy day than on a sunny one. Excess mist can cause increased disease risk, nutrient leaching and algae.

Higher media and/or air temperatures can encourage rooting, but make sure it isn't too high to stress cuttings. 70-75°F(21-24°C) soil temp is ideal, check often with a handheld thermometer (meat into the liner media or IR—aim at the bottom of tray) to be sure heat is working.



Provide as much light as possible without raising temperatures. A target DLI is >4 moles/day (5-10 moles/day will result in good rooting), higher light will require close watch of mist so cuttings don't dehydrate. Higher light and warmer climatic zones may consider adding shade. Aim for limited air movement so the relative humidity stays high and the cuttings remain turgid with less mist.

Cuttings should never wilt, but keep them right on the edge of it after the first couple days of misting. This will allow for more speedy rooting as the cuttings will push roots to survive.

Consider feeding (especially heavy feed requiring species) within the first 10 days. If feeding through the mist is possible utilize 50-100ppm N.

Reduce or remove mist as quickly as possible as roots begin to form.

Toning

Remove trays from the propagation zone or change conditions as soon as roots are formed to "tone" the cutting. An ideal environment is cooler and drier than the propagation zone, closer to real growing conditions.

Proper toning environment can help you avoid unnecessary chemical applications (PGR and fungicides). High light and cooler temperatures will help control growth and harden the liner for transplant or shipping.

Extra Considerations

Remember many species require supplemental lighting in propagation, begonia and dahlia are a couple. Without lighting in propagation, the plant will not finish properly.



Transplanting on time will help the overall finish. Non-rootbound liners will perform better than rootbound ones.

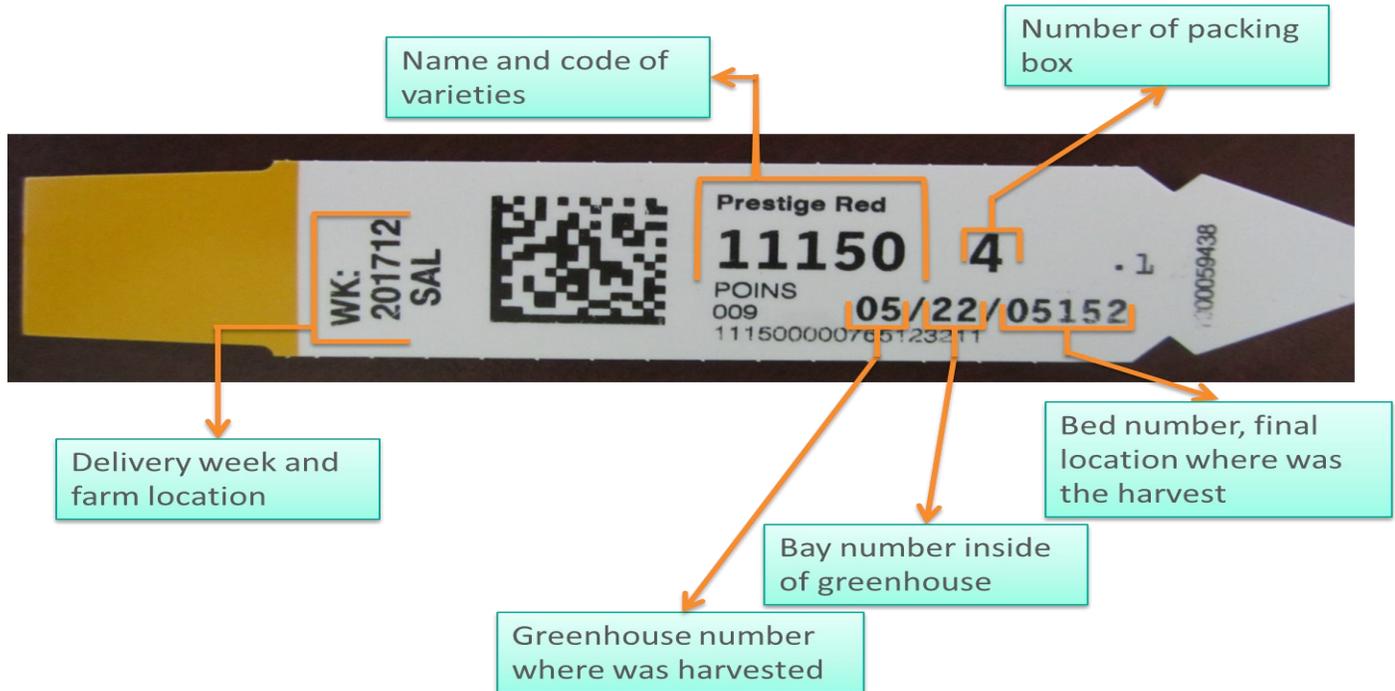
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Information on a label

It is important to save the bag label (stick it in the tray) and carry throughout the growing process. This label contains a wealth of information that is helpful to the farm staff to track and trace back any issues that might arise with the plants.



Ethiopia geranium tag colors

Sticking geraniums with high priority upon arrival is important. Geraniums from Ethiopia come with further designation for sticking success. These colors/varieties should be grouped together in your propagation zone.

White tops—Stick first (most sensitive varieties, slowest to root)



Yellow tops—Stick middle



Orange tops—Stick last (strongest varieties, fastest to root)



Resources

Faust, D. J. (2017, August 31). *Perfecting propagation*. GrowerTalks. <https://www.growertalks.com/Article/?articleid=23210>.

Faust, D. J., Lopez, R.. (2009, November 3). Geranium cocktails for reduced leaf yellowing and increased rooting in propagation. Floriculture Research Alliance Meeting.

GIE Media, & Hammer, D. A. (2017, June 23). *5 tips for cuttings success*. <https://www.greenhousemag.com/article/five-tips-for-cuttings-success/>.

Letherwood, R., Enfield, A., & Lopez, R. (2006, November). *Getting the most out of cuttings*. Greenhouse Product News. <https://gpnmag.com/article/getting-most-out-cuttings/>.