

Tissue Culture Heuchera

Best Practices for Success

Heuchera from tissue culture are not difficult to establish if certain protocols are followed. The critical factor to understand is that these have been grown in a lab under high humidity and low light. Lower humidity and higher light levels must be avoided until the TC has been acclimated.



ARRIVAL & HANDLING PRIOR TO OPENING CONTAINERS

- Open box in a cool room or office. Do not open in a warm or sunny/lighted greenhouse.
- Be aware of the temperature inside the box upon arrival. If it is warm (i.e., above 75°F) it is beneficial to remove the containers and place in a cooler at 65°F to slowly cool before opening.
- TC should be planted immediately upon arrival. However, if the TC is not going to be planted immediately (i.e., same day), remove the vessels from the box and store the unopened containers in a lighted (<400 f.c.) room at 65-75°F. A germination or growth chamber with higher humidity is ideal. **DO NOT PLACE IN A COOLER OR IN AN AREA WITH EXCESSIVELY LOW HUMIDITY (<50%).**

PROPAGATION HOUSE PREPARATION

- Benches and surrounding area should be sanitized with a quaternary ammonia or hydrogen peroxide product.
- ‘Tents’ should be set up on the benches. The purpose of the tents is to maintain very high (95%+) humidity and significantly reduce the light intensity to <150 f.c.
 1. Domes can be constructed using lightweight tubing or rectangular frames can be easily put together using PVC tubing and connectors.
 2. Enclose the tent with plastic sheeting. White greenhouse poly is ideal.
 3. Shade cloth should then be placed over the tents.



TRANSPLANTING

- Open petri dishes or vials to be planted in a controlled environment. Ideal environment would be 65-75°F and very humid, on the verge of foggy.
 - Remove plantlets and rinse the nutrient agar from the roots (this makes it easier for planting).
 - Grade the plantlets. Separate those with only tiny root initials from those with developed roots. These should be planted in separate trays.
 - Plant into trays filled with a well-drained media with a pH of 5.5-6.0 and an EC<1.0.
 - * Higher starter charge and/or controlled release fertilizer is not recommended.
 - * Heavier media may benefit from loosening up with additional perlite.
1. Water trays well to a moisture level 4.
 2. Using a small plastic spatula or similar tool, lift the media in the center of the cell to create a hole large enough to contain the roots.
 3. Hold the plantlets in place while replacing the media around the roots and gently tamping to secure. *Be sure the crown is above the media surface and free of any particles.
 4. Plant the smallest plantlets the same way but in separate trays.
 5. Water plantlets in with mist as soon as possible, ensuring the media is wet but not saturated, as this can slow root development.



PLACE TRAYS IN PROPAGATION HOUSE

- Transport planted trays to propagation area.
 - Avoid direct sunlight.
 - Avoid strong airflow and low humidity.
- Place trays inside tents and lower the sides to contain humidity.
 - Ideal media temperature is 72-78°F
 - Ideal light level is 100-150 f.c.
 - Some air exchange is beneficial, such as through the benchtop, but not air flow.
- For smaller quantities, the trays with the smallest plantlets can benefit from being covered with a plastic lid at 100% humidity until roots begin to develop in 5-7 days. The lid can then be removed with the tray remaining in the tent. For larger numbers of less mature TC, be sure to maintain near 100% humidity.
- Mist as necessary to maintain high humidity. Monitor media moisture to maintain a constant level 4 to encourage root development.



REMOVING TRAYS FROM PROPAGATION TENTS

- By the end of the second week plantlets will be rooting into the media.
 - Gradually reduce humidity and increase light levels by first opening up the end of the tent, and then by gradually rolling up the sides every 2 days.
 - Liquid feed program can begin at very low rates (i.e., 25-50ppm N) by day 21.
 - *Trays with the small plantlets may stay under higher humidity until roots have reached the sides of the cell.

MOISTURE SCALE

5=Saturated. Media is wet and drains freely. Water is easily displaced with a light touch.

4=Medium Wet. Media is glistening but water is not draining freely. Water is displaced slightly with a squeeze.

3=Medium Dry. Media is not dark black and glistening. On the verge to changing to light brown. No water is easily displaced when squeezed but moisture can be felt.

2=Dry. Media has changed to light brown. No moisture can be felt.

1=Very Dry. Media is light brown and may be pulling away from the sides of the container. Plant is wilting.