

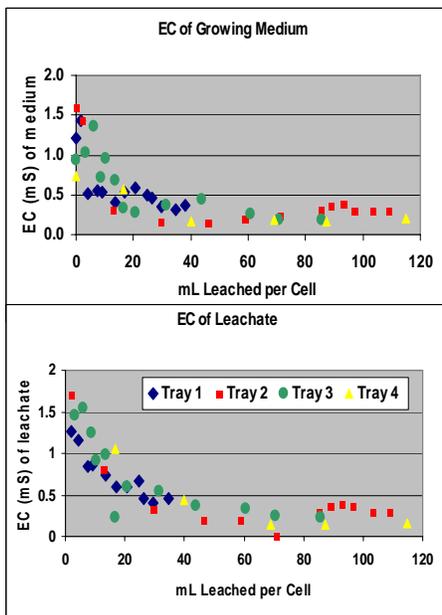
How to Measure Leaching in Propagation

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Introduction

Leaching is important because it washes nutrients out of the growing medium (leading to nutrient deficiencies) and may lead to runoff into the environment.

- Growers vary greatly in how much water is leached during propagation of cuttings. In our study, this ranged from 0.2 to 1.6 gal (0.6 to 6 liters) per tray over a 4 week crop cycle.
- In the worst case scenario, that is equivalent to a 50 x 30 x 4 ft swimming pool of water, and 3 bags of 20-10-20 fertilizer, leached per acre over 4 weeks.
- After 1 oz (30 mL) of water has leached through a size-84 or 105 cell (around $\frac{3}{4}$ gal or 3 liters/tray), the preplant nutrient charge is washed out.



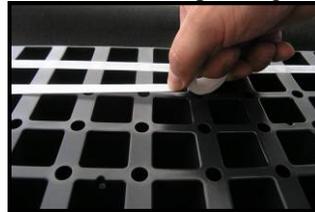
It is easy to measure leaching. You will need:

- A white Rubbermaid 6"x15" cutlery tray (or similar) that fits beneath your liner tray. This is the "leachate collector".
- $\frac{1}{2}$ " surgical tape (or similar) water-resistant tape to cover vent holes in the top of the tray.

Steps

1. Select 5 propagation trays in the greenhouse. Choose trays at different spots in the greenhouse to check both volume and variability between trays.

2. Cover vent holes on top of the propagation trays with the $\frac{1}{2}$ " tape (this is easier before planting).



3. Place a leachate collector beneath each propagation tray. The bottom of the cells in the propagation tray should be at least 1-inch above the leachate collector so that the cells will not be sitting in water by the end of the week.



4. Leave trays in the greenhouse for 1 week and irrigate normally.



5. After 1 week measure the amount of solution in each leachate collector.



6. Check electrical conductivity (EC) of the leachate. Low EC (near the EC of your water source) indicates that most nutrients are leached from the growing medium.

Also use a plug squeeze test to check EC in the growing medium.

7. Run this protocol over four weeks, to track water and nutrient trends as the crop ages.

Calculate leaching volume per propagation tray

- Our standard leachate collector is 45% of the total surface area of a typical 10x20-inch 84-count propagation tray and 39% of an 11x21-inch 84-tray. If you use a different collector or propagation size, calculate its surface area as a percent of the tray area.
- To calculate the total volume leached per propagation tray per week:
 - Take the volume of water in the leachate collector
 - Divide by 0.45 (1020 tray) or 0.39 (1121 tray).
- For example, if 30 oz leached into the collector from a 1020 tray that equals $30/0.45 = 67$ oz or 0.5 gal/propagation tray.

If you have high leaching rates (0.5 gal or more per propagation tray over 4 wks):

- Check both irrigation frequency and duration.
- Check boom or mist nozzles are providing even coverage (are you watering everything heavily to avoid wilting in a few dry spots?).
- Train staff to water evenly and moderately.
- Evaluate fog or other ways to increase humidity; or shade to reduce light so that water application can be reduced.
- Ensure adequate nutrients are being applied.