

TECH TRAINING: BREAKING THE GREEN BRIDGE

What do we mean by “breaking the green bridge”? After the last plants have shipped out and the greenhouse is empty for the season, remaining pests and pathogens require a host to survive and bridge to the next crop. Whether that host is a holdover from the previous crop, a pet plant, weeds growing under benches, loose debris, or an algae-covered surface, these hosts provide refuge and an avenue for pests and pathogens to find the next crop. This is why it is important to not only empty the greenhouse between crops, but also to sanitize and ensure everything is done to start clean and stay clean during the next production cycle.

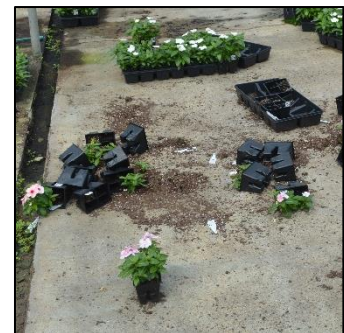
Tip 1: Eliminate Weeds

- Use greenhouse-approved postemergence herbicides to eliminate weeds that are already growing. Some products cannot be applied with crops present. **Always follow the label.**
 - Envoy Plus (Clethodim)
 - Reward (Diquat)
 - Scythe (Pelargonic Acid)
 - Roundup Pro Concentrate (Glyphosate)*
 - Finale XL T&O (Glufosinate-ammonium)
- Use greenhouse-approved preemergence herbicides to prevent weeds from establishing. Always follow the label.
 - Marengo (Indaziflam)*
 - SureGuard SC (Flumioxazin)*



Tip 2: Remove Debris and Clean

- Remove from the greenhouse and dispose of:
 - Fallen leaves and plant material
 - Leftover plants from the previous crop cycle
 - Trash on the floor or in bins
 - Used trays and containers
- Sweep floors and benches and clean surfaces with pressure washers or products like Strip-It



Tip 3: Sanitize

- Utilize sanitizing disinfectants on floors, benches and other surfaces after cleaning and debris removal. Always follow the label.
 - Quaternary ammonium compounds (Green-Shield, Physan, KleenGrow)
 - Hydrogen peroxide (ZeroTol, OxiDate, SaniDate)
 - Bleach solution



** Denotes that product cannot be applied when crops are present.*

DEEPER DIVE: THE WHY

After a hectic growing season, the site of an empty greenhouse is one of the most relieving feelings a grower can have. As the last pots ship and the stragglers are sent to the compost pile (very important to eliminate stragglers), it can seem like things are ready for the next crop. *However, have you taken a moment to check under the benches?* And not just at the front, but all the way down to the sidewalls? Back under the cooling pads? While the house is empty, it is critical to eliminate the weed population.

There are postemergence herbicides that are safe to use in the greenhouse but be sure to follow the label. Not all products can be applied with crops in the house, and some are restrictive to applications only below benches. Preemergence herbicides can also be used on greenhouse floors to prevent weed emergence and keep your greenhouse weed-free. More information on herbicide use in the greenhouse is available from [North Carolina State University](#). Contact your chemical representative to ensure you are purchasing the correct products. Always read and follow the label as instructed. For operations recirculating water, also consider that herbicide residues can be reapplied through irrigation, but this varies based on the active ingredient, water volume and whether any water treatments are applied.

In-depth discussions on cleaning and disinfecting greenhouses are available from [University of Massachusetts](#) and [Michigan State University](#). Once larger debris is removed and surfaces are swept, consider cleaning surfaces with pressure washers, soaps, or other products such as Strip-It. This will remove any small organic particles and increase the efficacy of sanitizing products. Wet spots in the greenhouse turn greener as the season goes on, making a great place for pathogens, fungus gnats and shore flies to shelter between crops.

In addition to physically cleaning surfaces, utilize chemical disinfectants like quaternary ammonium compounds, hydrogen peroxide or a simple bleach solution. These disinfectants can be applied to floors, walls, benches, or other greenhouse surfaces that harbor pests and diseases. It is important to note that disinfectants typically kill pathogens on contact and have little to no residual activity, meaning they do not provide extended protection against pathogens after application.

Final notes for success

- Let the greenhouse sit empty for a few weeks after cleaning. Extra time helps eliminate any remaining pests and pathogens before the next crop comes in.
- While it's important to make sure the inside of the greenhouse is clean, don't forget to look outside. If you have tall weeds, piles of debris or other sources of contamination outside the vents or doors, this offers an additional route of contamination for pests and pathogens.
 - Also consider employee traffic patterns, as people are often a major contributor to pest and pathogen dissemination.
- Deep cleaning and sanitizing are an important step between crop cycles but strive to keep houses clean all season long.

Start and stay clean this season by breaking the green bridge! For more information, check out these Tech On Demand resources:

- [Breaking the "Green Bridge"](#)
- [Start Clean. Stay Clean.](#)
- [Podcast: Greenhouse Sanitation](#)