



# When Clean isn't Clean Enough:

## Getting Serious About Sanitation

December 2015

It's a common misconception that cleaning alone will eradicate pathogens from greenhouses. However, cleaning only eliminates pathogens attached to the debris that's removed during cleaning and generally doesn't kill pathogens. Sanitizers kill pathogens.

However, don't forego the cleaning step! Sanitizers only kill pathogens by contact. If media, debris, algae or biofilm are stuck to a bench, the sanitizer won't kill pathogens hidden in or under this material, because contact is prevented. Remove the debris and you remove the hiding spots.

**Remember: Clean to remove dirt and debris, but sanitize to kill pathogens.**

Thorough sanitation is a four-step process:

- 1) Physically remove debris
- 2) Chemically clean surfaces to remove all dirt, algae, etc.
- 3) Rinse the surfaces with clear water
- 4) Sanitize to kill pathogens that may be present on surfaces

Physical cleaning and power washing will remove bulky debris. Chemical cleaning will remove tightly adhered dirt, mold, algae and biofilm. After rinsing with clear water, the surface is ready for sanitizing.

GGSPRO's favorite chemical cleaner is Strip-It. Strip-It can be used on all hard surfaces in greenhouses at a rate of 5 oz/gal. Clean pots by soaking at 2.5 oz/gal. Clean irrigation systems by direct injecting Strip-It at 1:50 and allowing the solution to sit in the lines overnight before rinsing. Strip-It is an acid detergent; be sure to wear proper protective gear during application and avoid contact with the crop. Strip-It is not suitable for use in enclosed areas, such as small grow rooms and warehouse growing operations. For these sites, use Horti-Klor, a stable, chlorinated detergent.

### Featured Products

Product	Description	Item No.
Green-Shield conc. 20%	1 gal.	74-3660
Horti-Klor	5 gal.	74-2105
KleenGrow	1 gal.	74-21101
SaniDate 5.0	2.5 gal.	71-35001
SaniDate 12.0	30 gal.	71-35351
Strip-It	2.5 gal.	74-2124
ZeroTol 2.0	2.5 gal.	71-35501

Preferred sanitizers fall into three categories, described below. Bleach will kill pathogens, but is not favored due to exposure risks from caustic fumes and rapid deterioration in solution.

#### Oxidizers: SaniDate 5.0 and ZeroTol 2.0

Use on hard surfaces, pots, irrigation systems and tools. SaniDate 5.0 rate = 0.5 oz/gal for most applications (50 oz/100 gal for irrigation systems). ZeroTol 2.0 rate = 2.5 oz/gal for all applications (equals direct inject at 1:50 for irrigation systems). SaniDate 12.0 is an option for irrigation systems. Monitor concentration with PAA test strips.

#### Advanced quaternary ammonium: KleenGrow

Use on hard surfaces, pots, irrigation systems and tools. Rate = 0.5 oz/gal for all applications when no plants are present. May be direct injected into irrigation systems (no plants present). Monitor concentration with QAC test strips.

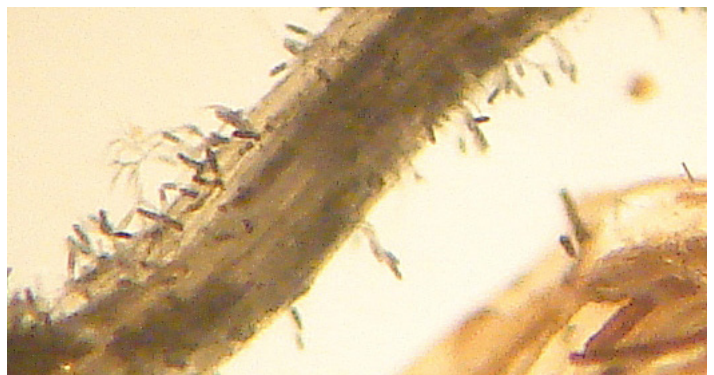
#### Second generation quaternary ammonium: Green-Shield

Used on hard surfaces and pots.

Contact GGSPRO for bulletins that detail sanitation protocols. Read and follow all product labels. Products other than those mentioned may also be safe and effective. Registration status may vary by state.



*Algae and biofilm under benches can harbor pathogens that can cause disease.*



*Thielaviopsis spores are long-lived in a greenhouse. Kill the spores with effective sanitizers.*