



Greenhouse Pest Message, October 20, 2023

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Start Clean to Stay Clean

It's best not to wait until just before you start up in the spring, to begin cleaning, removing clutter and organizing your greenhouses. Cleaning earlier than later helps eliminate overwintering sites for the many insect and mite pests that may overwinter in unheated greenhouses, especially during warmer winters. Removing infected and infested plant debris helps prevent the spread of diseases.

Remove all weeds inside that will harbor aphids, two-spotted spider mites, thrips, and whiteflies, slugs, and diseases such as impatiens necrotic spot virus/tomato spotted wilt virus. Low growing weeds can also promote moist conditions, favoring fungus gnats, which are a primary pest during spring propagation. With the extensive rainfall this year, weeds are also prevalent surrounding greenhouses. It's best to have a 10 to 20 ft. weed-free area around the greenhouse to prevent emigration of weed seeds into the greenhouse.

Cleaning is a two- step process with first removing organic matter and then applying a disinfectant labeled for greenhouse use.

First, sweep and remove all organic crop debris. Organic matter inactivates many of the disinfectants (oxidizing agents that kill fungi and bacteria). Microbes can also hide underneath the organic debris.

The greenhouse floor is a major source of the disease pathogens that cause root rot and damping off diseases. Sweep the floor to remove all plant debris, potting media, dust, and algae. Follow with a high-pressure water cleaning. Power wash the walls first, and then work down to the benches and greenhouse floor.

Many growers use specific greenhouse cleaners such as Pace Strip- it Pro, which is a blend of acids, surfactants and wetting agents that can be applied with a foaming attachment removing organic matter and mineral deposits without scrubbing. Applying with a former, helps to ensure better coverage and longer contact time. Allow to sit for 5 minutes before rinsing with a high-powered hose.

After the surfaces are cleaned, you can then use a disinfectant. There are many different commercially available disinfectants developed specifically for greenhouse use. Carefully read the label of the product before use. Be sure to follow all label safety precautions including PPE needed.



Some commercially available disinfectants include quaternary ammonium compounds or “Q salts” such as Kleen Grow or GreenShield 11 (if you have it on hand). Hydrogen peroxide and peroxyacetic acid products are available such as Xero Tol 2.0, Oxidate 2.0 and Sanidate which are strong oxidizing agents. Organic materials (OMRI listed products) include Oxidate, SaniDate, PERpose Plus and ZeroTol.

Use chlorine bleach with caution, as it is highly volatile, can irritate mucus membranes and lungs, and irritating to skin and eyes. It can also corrode metal. For your personal safety, it should only be used in a well-ventilated area. Mix fresh solutions every two hours because its efficacy drops, as the chlorine gas is lost at the liquid surface. Exposure to sunlight also reduces its efficacy.

It is best to use new plug trays every season. Assess the risk of re-using plug trays especially for seedlings prone to damping off and root rot diseases. Young plants are more susceptible to diseases than mature plants. Plug trays can be difficult to clean because the inside corners trap organic debris. First, power wash or brush to remove organic debris. Then, soak in a disinfectant according to label directions and then rinse with plenty of clear water.

Clean irrigation systems before re-use. Remove the emitters and flush your lines. Use a disinfectant that is labeled for use for irrigation systems and allow it to set for several hours to overnight. Run irrigation lines with plenty of clear water to clean the system.

Plan on starting clean for successful start to your spring growing season.

For more,
Sanitation of Hard Surfaces Between Crops in Greenhouses
<https://www.youtube.com/watch?v=n-016p1F6q4>

Weed Control as Part of Sanitation Practices in Greenhouses

<https://www.youtube.com/watch?v=eeAIB-KBPFw>

Poinsettias are just starting to show color. Whitefly pressure seems to be low this year, but some varieties are shorter than ideal.

If you are using biological controls, are you seeing any whiteflies? Are you seeing any signs of parasitism or host feeding?



Figure 1: Sweetpotato (*Bemisia*) whitefly eggs, small crawlers, and pupae on underside of poinsettia leaf. Within circle, see the c-shaped developing larval parasitic wasp inside the pupae. Photo by L. Pundt



Figure 2: On the right, whitefly pupal case with round emergence hole where parasitic wasp has emerged (circled). On the left, brown parasitized sweetpotato (*Bemisia*) whitefly on underside of poinsettia leaf. Photo by L. Pundt

For more: Poinsettia Pest Management Pointers 2023: Late Production and the Whitefly Tipping Point <https://onfloriculture.com/2023/10/17/poinsettia-pest-management-pointers-2023-late-production-and-the-whitefly-tipping-point/>

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