

Pesticide Use and Selection in Cornell Greenhouses

This section delineates the specific procedures for application of pesticides in greenhouses operated by the College of Agriculture and Life Sciences (CAL S) in Ithaca. For more detailed information about pest control in greenhouses, please refer to the following:

- *Integrated Pest Management for Bedding Plants: A Scouting and Pest Management Guide*
- *Guide for the Integrated Management of Greenhouse Florist Crops*
- *Cornell University Health and Safety Policy 8.6*
(<https://www.dfa.cornell.edu/tools-library/policies/environment-health-and-safety>)

Pest Management Guidelines can be ordered from the Cornell Store
(<https://departments.cornellstore.com>).

All pesticide applications must be in compliance with the Cornell University Health and Safety Policy 8.6, New York State and Federal regulations.

Requirements

- Any person who applies pesticides in a CAL S greenhouse will be a New York State (NYS) certified commercial applicator, technician or apprentice.
- Whenever possible, pesticides will be used that are labeled for greenhouses, the correct crop and the identified pest.
- Whenever possible, pesticides used in the greenhouse will have a 12-hour or less restricted-entry interval (REI).
- Given two products with the same active ingredient, the NYS Department of Environmental Conservation (DEC) considers the greenhouse-labeled product to be formulated such that it is more effective and less harmful to workers than a field-labeled product.
- The Federal Worker Protection Standard must be complied with at all times.

Basic Procedure

- This document applies to all pesticides and experimental pesticidal products applied in CAL S greenhouses, including granulars, horticultural soaps, plant growth regulators and oils. A pesticide is considered to be any product that has a federal EPA registration number or is exempted from the requirement for a registration number based on 40 CFR 152.25. Experimental products are dealt with in detail in a later section.
- The greenhouse staff makes pesticide applications in CAL S greenhouses on an as-needed basis.
- A researcher may not make pesticide applications to his/her own crop in the greenhouse unless approved by the greenhouse supervisor or manager.

Worker Protection Standard (WPS) Posting

The Worker Protection Standard requires two kinds of posting: 1) application information displayed in a central area and 2) a warning sign displayed near a treated area.

Central Posting: The WPS requires that a pesticide application list be posted at the central posting area. The pesticide application list must include:

- the location and description of the area to be treated,
- product name, EPA registration number, and active ingredient(s) of the pesticide,
- time and date the pesticide is scheduled to be applied, and
- restricted-entry interval for the pesticide.

The pesticide application information should be recorded on the application list and displayed before the application takes place. If the pesticide is not applied as scheduled, the applicator must list the corrected time and date that the application takes place, either before the application or as soon as practical thereafter.

Pesticide-specific information must be displayed until:

- at least 30 days after the restricted-entry interval expires, or
- at least 30 days after the end of the application, if there is no restricted-entry interval for the pesticide.
- removed by the greenhouse supervisor/manager or designated trained staff.

Posting Warning Signs: In greenhouses, “Keep Out” signs must be posted so that they can be seen from all points where workers usually enter the treated area, including doorways, aisles, and other walking routes. When there are no usual points of worker entry to the treated area, the signs must be posted in the corners of the treated area or in places where they will be seen easily.

- Post signs 24 hours or less before the scheduled application of the pesticide.
- Keep signs posted during the application and throughout the restricted-entry interval. If the REI = 0, the signs can be removed when the application is complete.
- Remove the signs within 3 days after the end of the restricted-entry interval. If there is no restricted-entry interval, remove the signs within 3 days after the end of the application.
- Keep workers out of treated area during the entire time the signs are posted (except for trained and equipped early entry handlers).
- Keep signs visible and legible while they are posted.
- Certified pesticide applicators or designated trained staff are responsible for WPS central posting and warning sign display/removal.

Responsibilities for WPS Implementation in CALS Greenhouses

Note: For more information see Worker Protection Standard in Cornell Greenhouses

- If a crop is treated in a designated area and returned to the greenhouse when the residues are dry, then the greenhouse or the treated crop must be posted with the warning sign throughout the restricted-entry interval. Workers can enter the treated area without early entry Personal Protective Equipment (PPE) (as identified on the product label) if they have no contact with pesticide residues on the plants, in the soil or planting medium or in water (drainage water or hydroponic solutions).
- The applicator is responsible for updating the pesticide application list on the central posting board.
- The applicator or designated greenhouse staff will ensure that the label notebook in the central posting area contains a current label and SDS for all products used in the greenhouse.

Pesticide Products Registered for Use in the Field

Given the choice between two or more products with the same active ingredient, the product labeled for greenhouse use will be preferable to that labeled for field use, even if the field product lists the crop on the label and the greenhouse label does not list the crop. Pesticide selection based on greenhouse site takes precedence over crop. When a greenhouse label that does not include the crop is used instead of a field label, small-scale phytotoxicity testing will be needed to verify the product's efficacy and lack of harm to the crop. Field products will only be given consideration in cases where phytotoxicity testing reveals a problem with the greenhouse product or existing greenhouse products with the pest on the label are no longer effective.

The greenhouse supervisor/manager will keep a master list of products that will include efficacy and phytotoxicity data for tested crops. Research groups can access the list in order to make pest control decisions in consultation with the greenhouse supervisor/manager.

Field products can be used in CALS greenhouses under a very limited number of circumstances:

- Existing greenhouse products with the pest on the label are no longer effective or cause physiologically relevant phytotoxicity.
- There is not a product with the same active ingredient registered for use in greenhouses.

In the case that field products must be applied, the following conditions must apply:

- The greenhouse staff must make the maintenance pesticide application and are responsible for complying with WPS requirements.
- Because of unknown consequences of using field products indoors, the REI is automatically doubled. If the doubled REI is greater than 12 hours, then the product

must be applied in a designated area determined by agreement between the researcher and the greenhouse supervisor/manager.

Experimental Products

For purposes of this discussion, an experimental product is any product intended for pest control or plant growth regulation that is not registered in New York State for the intended use. An experimental product may have federal registration but not NY registration, or it may not be registered at all. Three circumstances may require the application of experimental products onto crops grown in CALS greenhouses:

1. Research is being conducted on the efficacy of the experimental product,
2. The crop requires a maintenance application, and no registered greenhouse or field product is available for the particular crop/pest complex, or
3. No registered greenhouse product is available for the particular crop/pest complex, the crop requires a maintenance application, and an experimental product has a shorter REI or other environmental or health benefit that justifies its preferred use over a registered field product.

When experimental products without federal registration are applied, the following conditions apply:

- WPS does not apply to experimental products being tested for efficacious properties. Therefore, there is no requirement for posting the application area, or for posting pesticide applications on the designated central posting board within the greenhouse [Ref. 40 CFR 170.103(j)]. However, the Greenhouse Management Committee in consultation with the Director, CALS Occupational and Environmental Health (OEH) strongly recommend that WPS posting procedures be followed in the interest of employee safety and health.
- The Greenhouse Management Committee in consultation with the Director, CALS OEH strongly recommends that researchers and pesticide applicators should consult SDS and the Director to determine proper PPE when working with compounds without WPS requirements.
- Plant maintenance staff should wear nitrile gloves when in the posted area for three days after the application if they will come into contact with pesticide residues on plants, in the soil or planting medium, or in water (drainage water or hydroponic solutions).
- If the active ingredient does not have a tolerance or an exemption from a tolerance, then any food or feed commodity to which it is applied must be destroyed.

When experimental products with an EPA registration number, but without New York State registration are applied, the following conditions must be met under a research mode:

- If the REI is for field applications, then the REI must be doubled, per the requirements for field products applied in the greenhouse. If no REI has been

identified for the product, then a 72-hour REI will be enforced. Any REI > 12 hours requires that the plants be treated in a designated area determined by agreement between the researcher and the greenhouse supervisor/manager.

- If multiple products with multiple REIs are being applied to crops within one greenhouse during overlapping periods, the entire house will be under a REI until 1) the REI with the last expiration time is completed or 2) until three days (72 hours) after the last application. Note: Method 2 simplifies calculations but may result in a more conservative REI.
- The pesticide applicator is responsible for posting warning signs in the treated area throughout the REI.
- Plant maintenance tasks in the designated research area will be done by either greenhouse or research staff who possess a minimum of WPS Handler training. The determination of plant maintenance responsibilities will be by agreement between the researcher and greenhouse manager.
- If plant maintenance staff will come into contact with pesticide residues on plants, in the soil or planting medium, or in water (drainage water or hydroponic solutions), then they must wear the PPE identified on the pesticide label of the product with the most protective PPE required for early entry work.

Interpretation

Any questions regarding interpretation of this document and/or any questions about specific pesticide application decisions in the CALS greenhouses should be brought to the attention of the Director, CALS OEH or greenhouse supervisor/manager. When necessary, these discussions will be referred to pest management experts within the College.