

Lilly Plant Growth Facilities Manual

This document establishes policy, procedures, and guidelines for the use of the greenhouses and plant growth facilities attached to Lilly Hall of Life Sciences. Your comments and suggestions should be directed to the greenhouse coordinators, or the Department Heads of Biology, Botany and Plant Pathology, or Agronomy.

Mission Statement

The Lilly Greenhouses and Plant Growth Facilities serves as the primary greenhouse space available to faculty, staff, and students in the departments of Biology, Botany and Plant Pathology, Agronomy, and affiliated USDA-ARS projects. The Facilities are dedicated to the acquisition and dissemination of knowledge through research, teaching, and outreach activities. These activities are related to specific courses, research projects, extension demonstrations, departmental functions, and department sponsored student organizations.

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Emergency Contacts for the Lilly Greenhouse Complex

Dial 911 in any emergency

Ron Steiner, Plant Growth Facilities Coordinator

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Cell Phone: (765) 491-4243

rsteiner@purdue.edu

Jason Deitrich, Building Deputy

Office: LILY 1403 Phone: 49-48079

Cell Phone: (765) 404-8621

jdeitric@purdue.edu

John Cavaletto, Teaching Labs Coordinator

Office: LILY 1418 Phone: 49-46474

cavalett@purdue.edu

Indiana Poison Control Center: 800-382-9097

Chemtrec: 800-424-9300

Indiana State Chemist: 494-1585

Indiana Dept. of Environmental Management: 317-233-7745

Purdue Radiological and Environmental Management: 494-6371

The Greenhouse Coordinators and their staff serve as facilitators to assist you in your plant growth activities. They will provide certain services and supplies listed below to enable you to grow healthy plants for research and education purposes. Since this is a multi-user facility, users also have certain responsibilities, which are listed below as well.

Services provided include:

- * pest scouting and control measures
- * photoperiod control
- * greenhouse maintenance and routine sanitation
- * setting up supplemental lighting
- * programming and monitoring of environment controls

Waste removal of transgenic plants, diseased plants, and Arabidopsis (contact Ron Steiner)

Supplies Available

Supplies provided include:

- * soil mix containing 50% mineral soil for grasses and long-term crops
- * carts for transport
- * customized soil mixes will also be available upon request
- * bagged soilless mixes; Sungro germination mix (peat, vermiculite, and a starter nutrient); Sungro 510 mix (peat, vermiculite, pine bark, and a starter nutrient)

Facility Users' Responsibilities:

Users should take an active role in monitoring and maintaining their crops, including:

- * planning space needs and supply needs in advance
- * spacing plants properly to ensure air movement and access for watering
- * giving instructions and feedback to the Lily Greenhouse Manager
- * monitoring for insects and diseases (in addition to greenhouse team's program)
- * fertility monitoring
- * keeping growth areas and work areas sanitary and orderly
- * repotting plants or supporting as needed to keep them upright
- * watering plants
- * terminating experiments in a timely manner and discarding plants
- * autoclaving or proper disposal of transgenic plant material according to biotechnology regulations (contact Ron Steiner about red barrel waste removal being applicable)

Storage

Storage in the greenhouse facility is very limited. Check with the greenhouse coordinators if you need to store an item. No items may be stored in greenhouse corridors. Do not use the ledges along the windows for storage. Items found there will be removed.

Only chemicals used for greenhouse or gardens may be stored in the pesticide storage room. No herbicides will be stored in the pesticide room at any time. All containers should be labeled, including those containing only water. Pesticides for research use either concentrated or in final solution (such as herbicides for screening) cannot be stored in the greenhouse. They should be stored properly in a laboratory hood and brought to the greenhouse for application only. Nutrient solutions can be stored in water-resistant tubs with secured lids under the benches.

Housekeeping

The Lilly Greenhouse Complex is a working facility, not a show place, but orderliness is still expected of all users. Failure to keep a sanitary, orderly growth area may result in loss of greenhouse services or re-allocation of that space to a different user. Please read the above section on "Storage" for managing your tools and supplies. Tools and supplies should be stored in a cabinet or water-resistant container. Items should not be left out on ledges or greenhouse benches. Chemicals (pesticides or otherwise) should not be stored in the greenhouse, and other chemical solutions should be stored in a water-resistant cabinet. It is the responsibility of the faculty to purchase these storage cabinets.

Users are also responsible for keeping the facility sanitary by cleaning up:

- * work tables after potting
- * carts after transport
- * under floors and on benches during experiments and after terminating experiment
- * sinks after use
- * greenhouse corridor floors if soiled by transporting your plants

Keys

Contact your departmental main office or LILY Building Deputy for more information.

Getting Space in the Facility for Your Plants

Space is allocated by the coordinators of the Lilly Greenhouse Complex. Graduate students, post docs, and visiting scientists should provide information to their responsible faculty about space needs for their experiments for that period by determining number of pots and final spacing. Once allocated, labs need to coordinate among their members to not use more space than allocated. One person in a lab group should be identified to greenhouse coordinators as having this coordinating role. This will ensure the best use of the limited space in our facility. Some additional space can be allocated, but only on faculty request. Conversely allocated space should not be left empty. Greenhouse users that leave their allocated space empty will be sent a notice that the space is not being used. If the space continues to go unused it will be assigned to others who have need of that space.

Plant/Cutting Inspection

Plants or cuttings from the field, other growing facilities, or commercial sources must be checked by greenhouse coordinators or technician for pests before being placed in growing areas. They can be taken to the soil room for inspection.

Inspection will ensure the safety of your crops as well as others. In most cases, if pests are found, the plants are still allowed in and we schedule an application immediately. Some plants will not be allowed in, however, particularly if showing signs of infectious disease.

Spacing Plants

Plants should be spaced properly on the greenhouse bench or in growth chamber to allow for air movement and access by greenhouse team to scout and spray. This will reduce incidence of pests and poor watering. Specific recommendations are not possible, due to vast number of species and pot sizes being grown. The coordinators will notify you if spacing needs to be changed. Failure to comply may result in loss of services or charge back for services. Please don't use close spacing to make up for lack of space allocation, or loose spacing to "hold" bench space.

Quarantine Areas

Some areas have special quarantine restrictions due to the presence of a viral disease. Policies for working in these zones are posted on the doors, and are often determined with input from the user. It is the responsibility of the user to read about, learn and follow these procedures. Users must let us know if you suspect plant material you will be transferring to the facility may be infected with viral diseases.

Collections, "Pet Plants", and Other Long-Term Crops

Space in the facility is reserved for active teaching and research only. Personal use "pet plants" are not allowed. Starting personal garden plants or houseplants is not allowed. Collections should be used actively to fulfill a teaching, outreach or research mission. Plants should not be kept longer than necessary in the facility, particularly if they've completed their life cycle and are not actively growing. Insects and disease really become a problem in all these cases, plus space is kept unavailable for active work.

Safety

The Greenhouse Team is responsible for operating the greenhouse in a safe manner, including Worker Protection Standards (WPS) compliance and handling of pesticides and other chemicals in accordance with all federal, state, local and university regulation. This is a particular challenge in a facility available to its users 24 hours a day, and so requires a great deal of communication and cooperation.

We are committed to making information available about the chemicals we use and when. A pesticide application record manual is posted inside the north entrance to the greenhouse. Material safety data sheets (SDS) and copies of labels are available in the same location.

Facility users must inform greenhouse technicians prior to chemical applications of herbicides, fungicides, and other regulated chemicals to ensure compliance with all appropriate regulations.

Facility users are responsible for determining what university safety regulations apply to their work in the Lilly Greenhouse, and for compliance. Faculty are responsible for their staff's safety compliance in the Lilly Greenhouse, and their staff receiving applicable safety training. Users are responsible for working safely and keeping the facility safe for others. This includes learning emergency procedures (i.e., fire evacuation), and location of phones, fire extinguishers, safety shower/eyewash stations, and first aid kits. The same departmental policies toward glove contamination and labeling chemicals applies in the greenhouse. Keep in mind that the public will often be in this facility, including children.

Pesticide Application Protocol

This protocol specifies the procedure to request specific pesticide applications to plants in the Lilly greenhouses, and how requests will be communicated and scheduled with the pesticide applicator. All pesticides must be applied by a certified pesticide applicator.

To request a specific pesticide application in your assigned greenhouse space, a pesticide application form must be completed and submitted by the faculty member or designated contact person listed on the greenhouse space request form. These forms are located in the yellow folder labeled "Pesticide Application Records" on the table at the north greenhouse entrance. All information requested on the form must be completed. Specifically, this includes faculty or contact person, date of request, an e-mail or contact phone number, the type of pest infestation (e.g. aphids), greenhouse number and benches. There also is a space for additional comments that allows for specific details that will help the applicator, such as pesticide desired, or times the greenhouse will not be occupied.

Pesticides will be applied once a week by a certified pesticide applicator. Pesticide application forms must be filled out no later than noon on the designated spray day in order for a room to be sprayed. If a form is submitted after noon on the designated spray day, the room will not be sprayed until the following week. Thus it is important that you monitor your plants regularly for pest infestations.

EPA approved "NO ENTRY" signs will be posted on the doors of the treated areas during the Restricted Entry Interval. The REI is clearly marked on the "No Entry" signs. Entry into rooms during REI is prohibited to everyone and can range from 4 – 24 hours following the application, depending on the pesticide used.

It is the responsibility of each greenhouse user to scout for pests in their assigned rooms. Please request pesticide application as soon as insects are observed. Do not wait until after they have become a problem. Heavy insect infestations are not possible to control with a single spraying and serious damage or loss of plants could result. If you have questions about what to look for or steps you can take to prevent infestations, please contact the greenhouse coordinators.

Policy Violations

Users of the facility are responsible for learning and following these policies. Coordinators will communicate policies and remind users when they are in violation. Policies can be changed when they are no longer appropriate, or when a better solution is proposed. Repeated, deliberate violations of these policies may result in greenhouse services being suspended for that user or a reduction in allocated space.

Questions or Comments:

Questions can be directed to the Lilly Greenhouse Coordinators. You can also contact Department Heads in AGRY, BTNY, and BIOL.

Contacting Coordinators

The coordinators are committed to a 24-hour (maximum) response time on messages you leave during business days. You can contact the manager in person, by phone, voicemail, e-mail, memo, or note. Email is preferred unless the problem is vital. This will limit interruptions in tasks and give a written record to you and the coordinators.