



The **ARNOLD**
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Weld Hill Plant Growth Facility Policies

About: The Arnold Arboretum Weld Hill Plant Growth Facility (PGF) includes research greenhouses, growth chambers, and a common garden available for use by Arnold Arboretum and Harvard University Faculty of Arts and Sciences (FAS) affiliated research programs. The PGF has a wide range of environments available to accommodate a diverse range of users and disciplines. It is a shared resource with the goal of providing equitable use. Use of the facility must not violate university or governmental guidelines for the safe and ethical conduct of research.

Contact Info:

Plant Growth Facilities Manager
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Growth Facilities: 617-384-5454

Building hours and/or greenhouse access: The facility is open during the week from approximately 6:00 AM until 11:30 PM and from 10:00 AM until 10:00 PM on weekends and University holidays. Please try to access the greenhouses only during daylight hours as turning on a hallway or other light may negatively impact others' projects.

Space request: Requests to use any of the plant growth facilities (greenhouses, growth chambers, common garden) must be made by submission of the Space Request form. This is available on our website or from the PGF Manager and should be filled out as completely as possible. Prospective users are encouraged to contact PGF staff to discuss research needs prior to submitting a formal space request. Space allocation is on a first-come first-served basis. As such, requests for large areas or special requirements may not be able to be filled without considerable delay. Please contact the PGF Manager as far ahead of time as possible to determine availability. If two or more experiments do not require much space and have similar environmental requirements, the growing space may be shared by more than user.

The PGF staff can advise on the following:

- the scope of the experiment;
- appropriate space requirements (for the final size of the plants) and availability;
- appropriate container (pot) size and potting media;
- environmental and fertilizer requirements;
- pest control requirements;

- other issues or concerns.

Open communication regarding plant care needs will best facilitate optimum plant care, reduce problems, and promote productive relationships between users and staff. To help facilitate this, please pay special attention to space requirements, supplies needed, level of plant care, and the start and end dates on the space request form.

Exit Date and Renewal: So that we may best provide for efficient space allocation and transition from one greenhouse user to the next, users are required to provide a firm exit date when submitting a space request. If you realize that you will need time beyond your stated exit date, contact the PGF Manager as soon as possible. If a commitment has been made to another user, extension of the exit date may not be possible. Long-term users (greater than one year) must renew their space requests annually. Failure to renew the space request in a timely manner may result in the space being reassigned.

Supplies: Routine supplies in limited quantities are available at the facility free of charge. These include a variety of potting media and amendments, pots and other containers, and a variety of fertilizers. Please discuss with the PGF staff the quantities and types of materials required at least two weeks prior to use to ensure that sufficient supplies are available. If unusually large quantities of routine supplies are required, the user is required to purchase their own materials. Plants and specialized materials will need to be purchased by the user, but may be delivered to the PGF as space allows. Staff will be available to help source materials, as time allows.

Responsibilities:

As this is a shared facility, users share responsibility with the PGF staff for quality plant care and for keeping the growth facilities operating smoothly. Growth and work areas should be kept sanitary and orderly.

User responsibilities include:

- use proper pot size and pot filling technique to provide plant stability, reduce watering demands, and reduce the need for external support and pruning;
- clean worktables, potting benches, and other areas after use;
- clean up leaf and other plant debris from floors and benches during one's use of the PGF;
- sweep floors and benches after terminating experiments;
- discard plant and other materials from experiments as they terminate directly to outdoor refuse containers or other appropriate disposal containers (e.g. autoclaved and disposed of properly);
- limit the amount of potting media that goes down the drain;
- bring any plant health, pest, or facility issue to the attention of the staff; notify the PGF staff promptly of any changes in the project scope or requirements;
- provide and update contact information to allow staff to reach users during emergency situations.

Modifications to the facility are expressly forbidden without prior consultation and supervision of the PGF staff. There is limited storage space at the PGF. As such, please contact the PGF staff to discuss storage options, if needed. Items left in greenhouses, growth chambers, or the common garden without approval from management may be removed. Bicycles and pets are not permitted inside the Plant Growth Facility. Closed-toed shoes must be worn at all times. No food or drinks

are allowed in plant growth areas or areas of possible pesticide contamination. Smoking is not permitted in Weld Hill. Tobacco users must wash hands after smoking to prevent the spread of tobacco mosaic virus. Houseplants and other personal plants are prohibited.

Certain areas of the growth facilities are more difficult to treat for pests than others (i.e. growth chambers). When working in more than one area of the facility, an “order of entry” protocol should be followed to prevent the spread of pests and pathogens from one area to another. **Order of entry:** 1. Growth chambers 2. Greenhouses 3. Common garden area 4. Posted quarantine areas.

Plant Growth Facility responsibilities: PGF staff are available for consultation, advice, and help as time permits. Basic plant care is provided with PGF use, but may be modified in accordance with the user’s request. **Basic plant care includes:**

- watering (365 days/year);
- pest and disease scouting;
- cultural and chemical pest control measures in consultation with facility users;
- environmental controls;
- photoperiod control when possible;
- greenhouse and growth chamber maintenance and sanitation;
- routine application of fertilizer in accordance with the user’s request.

Extended plant care can often be provided by the Plant Growth Facility staff, as time permits. If the staff is not able to provide this care, users will be informed of this as far ahead of time as possible. **Extended plant care includes:**

- plant propagation;
- biological pest control requiring advanced scouting;
- consultation with external experts;
- transplanting or repotting of materials;
- pruning, trimming, staking or tying off plant material;
- harvesting of plant material.

The greenhouses and growth chambers are linked by a dedicated network of host computers equipped with sophisticated control and monitoring systems. Upon request, environmental data will be provided to users within their zones. Users will be given real time alarm notifications during their experiment, if requested. PGF staff are responsible for caring for the facility and its contents during emergency situations (water or power shutdowns, unusual weather phenomenon). All possible resources will be mobilized and used to maintain the integrity of the equipment and to permit the survival of organisms and satisfactory progression on experiments. Users must understand that emergency backup resources are limited and will be distributed equitably.

Pest policy: Successful Integrated Pest Management starts with a clean greenhouse. The growth facility is in operation every day of the year and may be toured or inspected at any time. Users are required to assist with general cleanup to maintain a safe, orderly and sanitary work environment for support staff and fellow researchers. PGF staff will monitor experimental populations for the presence of pest or pathogen issues and will apply preventative or

prescriptive treatments based on information from the initial space request as well as from continued communication during the experiment. When possible, the greenhouse staff will give users advance notice of pesticide applications or other greenhouse closures by email. Facility users may not use ANY substance registered as a pesticides unless they are a Massachusetts certified pesticide applicator and have been given approval by PGF staff. This rule applies to general use pesticides that can be purchased over-the-counter. Before a user brings plants into the growth facility, PGF staff should be given adequate notice so that plants can be inspected for pests and diseases. If needed, plants will be quarantined. In extreme cases, plants may not be allowed into the growth facility.

Pesticide applications: Only a certified pesticide applicator may make pesticide applications. Employees and students handling pesticide-treated plant material are strongly encouraged to wear gloves and to wash their hands after working in an area where a pesticide has recently been applied. All pesticide applications must be in compliance with Massachusetts and Federal regulations and Harvard University Environmental Health and Safety policies.

Pesticide Safety Awareness: Pesticide safety awareness training is intended to reduce the risk of pesticide poisonings and injuries among plant researchers and workers who are exposed to pesticide residues. Pesticide Safety Awareness training is required for all users of the facility including undergraduate students, graduate students, post-doctoral researchers, staff, faculty, and any other person who is not a trained early entry worker. Training will be given to all new facilities users.

Chemical use: Greenhouse users must contact PGF staff before bringing any chemicals into the greenhouse or associated non-laboratory areas (such as growth chambers, headhouse, hallways, and storage cabinets) and comply with all applicable OSHA Hazard Communication Standard (29 CFR 1910.1200) requirements. Users must label containers with their name, date and telephone number along with other OSHA mandated information. The use of chemicals and other products within the facility must be carefully managed to prevent risk to personnel or other users, damage to the equipment, and to avoid disrupting neighboring experiments.

Safety: Safety takes priority at the Weld Hill Plant Growth Facility. If there is an immediate concern to preserve life or property, call 911. If you see an unsafe condition or act, please contact PGF staff immediately. Cooperate with the PGF staff to ensure your own safety as well as that of your colleagues.

Transgenic and other BL-1 organisms: If any BL-1 organisms are to be used in an experiment, this should be noted in the appropriate space on the Space Request form. All appropriate COMS must be in hand before organisms are introduced. All plants used in research involving transgenic plants, biohazards, agents which legally require a quarantine, are virus-infected, or otherwise required by research protocols must be autoclaved, then disposed of properly.

- *All transgenic plant material* must be autoclaved in red autoclavable, biohazard bags and disposed of in Stericycle bins. (Stericycle bags are not autoclavable.)
- *Non-transgenic plant material* that requires autoclaving must be autoclaved in clear, unmarked autoclaved bags and disposed directly in the trash bins outside.

Conflict Resolution: Caring for the diverse collection of plant material in the greenhouses requires a wide range of skills and understanding. PGF staff are trained and experienced in most aspects of plant care and are here to provide service and assistance to greenhouse users. If your expectations are unmet, please first share your concern directly with the staff. The PGF staff will listen and try to understand your concerns and attempt to resolve the situation. If you do not receive satisfactory results, please contact the Director of Research Facilitation, Faye Rosin.