

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

PLANT GROWTH FACILITY POLICIES AND PROCEDURES

This document establishes the policies and procedures for the use and care of the Plant Growth Facility, comprised of the Greenhouse Complex (Fischer Greenhouse and South Greenhouse) and the Growth Chamber Facility, of the College of Agriculture and Natural Resources at the University of Delaware. It summarizes standard practices, the roles and responsibilities of the Plant Growth Facility staff, faculty, student, and staff users of the Facility

The Plant Growth Facility Advisory Committee (PGFAC) consists of a member from the departments of Plant and Soil Science and Entomology and Wildlife Ecology, along with the Plant Growth Facility Manager acting as Chair of the committee. Changes in this document should be submitted directly to the chair of the PGFAC for consideration. A recommendation for action will be made to the Deputy Dean of the College of Agriculture and Natural Resources as needed.

Training | Requesting Space | Requesting Plant Materials | Sanitation Procedures | Plant Waste Disposal | Equipment | Environmental Controls | Greenhouse Supplies | Staff Services | Greenhouse User Responsibilities | Plant Growth User Responsibilities | Fee Structure | Building Security

PLEASE NOTE:

Insect infestation is an ongoing issue within any greenhouse environment. The greenhouse staff monitors all plant material on a daily basis in an attempt to identify infestation at the earliest stage so that preventative or curative measures can be carried out. It is the intention of the greenhouse management to use biologically friendly materials whenever possible and use stronger chemical agents only if and when a particular infestation has reached population levels that require doing so.

Growth facility users who instruct the greenhouse staff to not use insecticides on their plant material must be aware of the potential damage an infestation can cause to untreated plants.

Section 1: Plant Growth Facility Staff Services

The Plant Growth Facility staff are professional horticulturalists who will provide training, horticultural advice and services. These services include:

1. **Daily watering (including weekends and holidays) and weekly fertilization of plants, unless directed otherwise by glasshouse user;**
2. **Please note, there is no watering support for growth chamber users. Users are responsible for watering and fertilizing their own plants.**
3. Help with setup of environmental conditions and planting of greenhouse and growth chamber projects;
4. Disease management and pest control in consultation with greenhouse and growth chamber user;
5. Production of plant materials for class use;
6. Assistance with purchase of seeds or plant materials required for greenhouse and growth chamber projects;
7. Provision of supplies for projects, including special soil mixes as requested by user. In some cases, users must cover the costs of supplies.

Section 2: Required Training for Facility Users

1. **First time greenhouse and growth chamber users are required to schedule an orientation session with the Plant Growth Facility Manager. In addition to introducing the user to the resources available, additional topics to be discussed will include: correct procedures to handle containers, soil mixes, fertilizers, disease and pests control, watering and supplies.**
2. All greenhouse and growth chamber users are required to complete EPA mandated Worker Right-to-Know training prior to starting any research in the facility. Refresher training is required every year. This training can be arranged through the Department of Health and Occupational Safety ([Link](#)).

Section 3: Sanitation Procedures

1. All new plant materials are to be inspected by a member of the Plant Growth Facility staff for infestation before being introduced into the greenhouse. Infected plants will be treated before being placed in the facility or may be denied placement in the facility based on current level of infestation.
2. **Disease and insect problems are to be reported immediately to the Plant Growth Facility Manager.**
3. Wash hands before working with plants. This is especially important when working with propagation materials or if you smoke tobacco products. Smoking is forbidden in the greenhouse.
4. Media is stored in the containers under the benches in the head house area and should be kept clean and free of debris. Do not re-use spilled soil or soil that accumulates on the floor. This should be placed in the compost cart. Contact Plant Growth Facility staff if additional media is needed.
5. All hose ends, water breakers, mist nozzles and other attachments should be hung up off the greenhouse floor when not in use. Water should be turned off and the pressure released. Report hose repairs to the Plant Growth Facility Manager.
6. Greenhouse benches are to be kept clean. Do not stand or put your feet on greenhouse benches. This will help avoid carrying diseases up to crop level.
7. Greenhouse carts should be hosed off after use and returned to the pad wall area.
8. Greenhouse space is to be kept clean and orderly by all users. Consult with the Plant Growth Facility Manager for storage alternatives.
9. Head house space is “common space”. No materials or equipment may be permanently stored in this area. Head house areas must be cleaned up immediately after use.
10. All dirty flats and pots should be placed in the pad wall area (main hallway in glass house) next to the sink. These items will be washed and restocked by the greenhouse staff. If you have supplies that need to be sterilized, please notify the Plant Growth Facility Manager.

Section 4: Requesting plant growth space for research

1. Requests for greenhouse space should be made using these forms ([Request for Greenhouse Space Form](#), [Request for Growth Chamber Space](#), [Supply Labor Request Form](#)) at least two weeks prior to the start of the project/research.
2. Greenhouse space will be assigned only for the specific time period required by the project. Greenhouse space will not be allocated for an indefinite time period.
3. The requesting user will receive a copy of the Space Request form indicating the assigned space. This form will also serve as authorization for any keys that need to be issued. All keys are obtained from the Assistant to the Deputy Dean, College of Agriculture and Natural Resources, and must be returned upon completion of the project.
4. Every effort will be made to meet space needs. Current space demands, project size, past performance, utilization efficiency, sanitation, cooperation and project importance will be considered when allocating space.
5. If greenhouse space is not available and the Plant Growth Facility Manager is unable to resolve the situation, a written appeal may be submitted to the PGFAC by the greenhouse user denied space.
6. Users must confine their plant growth projects to the area specially assigned to their project.
7. Users cannot re-assign their unused space to others; all space must be allocated per the process outlined in this policy.
8. Delays in project completion should be discussed as soon as possible with the Plant Growth Facility Manager. Extended delays are subject to review by the Deputy Dean, College of Agriculture and Natural Resources.

9. Greenhouse users are expected to leave the Plant Growth Facility (greenhouse/head house/growth chambers) clean at the time of completion of an experiment.

Section 5: Requesting Plant Materials for Use by Classes

1. Plant materials to be grown for classroom use require adequate lead-time. Requests for course materials to be sown each semester should be received by the Plant Growth Facility Manager two months prior to the first day of classes.
2. Requests for new crops, along with a delivery schedule, should be made far enough in advance to allow for a test crop to be grown.

Section 6: Plant Waste Disposal

If you generate **non-hazardous waste**, it can be composted.

1. Remove all labels/stakes/containers and then place the plant/soil material in the composting cart located in the head house area of Fischer greenhouse.
2. Large amounts of material may be carted directly to the compost pile behind the complex.

If you generate **potentially hazardous waste** (chemically-contaminated, infected with a pathogen, or transgenic, as well as potentially contaminated material such as soil, labels, containers, or adjacent plant material), dispose of the plants, soil, labels, and containers according to University of Delaware policies. It is the user's responsibility to determine the waste stream, and a waste disposal plan should be in place before an experiment is initiated.

For **chemically-contaminated waste**, follow the Procedure I for chemical waste at the OHS web site (www.udel.edu/OHS/chemwstmanage.html).

For **bio hazardous waste**, including transgenic plants and plants infected by pathogens, please follow this standard procedure:

1. Line an infectious waste box with two infectious waste bags
2. Label the box clearly with your name
3. When full, seal and label with name and date on top (Do not overfill as the box or you will be required to repack the waste.
4. As a rule of thumb, if an average person can lift it, it should be okay.)
5. Leave the sealed box outside Zone 4 in Fischer greenhouse for pick-up by Occupational Health and Safety.
6. More supplies (boxes, bags, and tape) can be ordered using the OHS web form (www.udel.edu/OHS/waste/biowstindex.html).

Section 7: Equipment

The Fischer Greenhouse Complex and the Plant Growth Chamber facility have an array of equipment available for trained users, including a soil mixer and seed dryer.

1. All requests for greenhouse equipment must be made to the Plant Growth Facility Manager in writing.
2. Users must receive training before attempting to use any to use any equipment. Training will be provided by the Plant Growth Facility Manager.
3. Equipment needed for class purposes should be reserved with the Plant Growth Facility Manager at least 3 days before needed.
4. Do not take equipment without notifying the Plant Growth Facility Manager.
5. Any equipment problems should be reported to the Plant Growth Facility Manager. Tools and equipment are not for personal use.

Section 7: Greenhouse Environmental Controls

1. Environmental control equipment (vents, shade curtains, thermostats) will be operated by greenhouse staff only. Changes in environmental conditions in individual greenhouse spaces should be requested in writing.

2. Malfunctions in the environmental control systems should be reported to the Plant Growth Facility Manager in writing. In an emergency situation, any Plant Growth Facility staff member may be contacted. A list of emergency contacts is posted on the greenhouse office door.

Section 7: Greenhouse Supplies

1. A supply of pots, flats, labels, fertilizer, media and other common use supplies are kept on hand for greenhouse users. These supplies are available for research and teaching projects at no charge.
2. **Researchers needing a large quantity of pots and growth medium, or materials not normally kept in stock may be charged for supplies needed.** When ordering supplies for research projects a purpose code number must be supplied to the greenhouse manger prior to orders being placed.

Section 8: Plant Growth Facility: *Greenhouse User Responsibilities*

1. Ensure that your safety training is appropriate and up to date
2. Maintain open lines of communication with Plant Growth Facility staff concerning the status of the project/course..
3. Submit a Request for Space/Supplies Form to receive space assignment.
4. Consult with the Plant Growth Facility Manager in advance if there is any requirement for large quantities or unusual types of supplies.
5. Obtain plant materials and non-standard supplies for project/course.
6. Clearly label all material in the assigned area including your name and the date of planting. Label any transgenic plants as such (USDA requirement).
7. Submit written requests for assistance, change in routine or change in location (i.e. special watering instructions, bench modification, moving plants, etc.)
8. Greenhouse users are expected to maintain an active role in the progress of their projects.
9. Maintenance of all dedicated equipment associated with one's project

10. Promptly notify Plant Growth Facility Manager of required repairs, replacements needed (lights, broken glass) or any other problems with the growth facility.
11. Maintain greenhouse space in orderly manner, paying particular attention to neatness and sanitation.
12. Remove yellowed or dead leaf material on a regular basis to reduce breeding areas for pests, provided this does not conflict with the experiment. Prune plants to maintain compact growth habit to reduce problems associated with overgrown plants.
13. **Immediately following a project, plant materials should be disposed of or harvested in a timely fashion. Allowing materials to become pest infested or overgrown will not be tolerated.**
14. Notify the Plant Growth Facility staff promptly when a greenhouse or growth chamber project reaches completion
15. Assist with disposal of unneeded plant materials and removal of equipment.

Section 9: Plant Growth Facility: *Growth Chamber User Responsibilities*

1. Ensure that your safety training is appropriate and up to date.
2. Maintain open lines of communication with the growth facility staff concerning the status of the project/course.
3. Plan space and supply needs in advance, including Request for Space/Supplies form.
4. Submit a completed request form Space/Supplies Form to receive a space assignment.
5. Consult with the Plant Growth Facility Manager in advance if there is any requirement for large quantities or unusual types of supplies. Users are responsible for ordering specialized supplies including pots, flats, and media.
6. Submit written requests for assistance or changes in routine or location (i.e. shelf modifications, light modifications, moving plants etc) to the Plant Growth Facility Manager.
7. Clearly label all material in the assigned area including your name and the date of planting. Label any transgenic plants as such (USDA requirement).
8. Plant and tend your plants in the chambers (this includes but is not limited to watering and fertilizing).
9. Space plants adequately to ensure air movement in growth chambers.

10. Maintain any dedicated equipment for your project.
11. Promptly report any repairs, replacements needed (e.g. lights) or any other problems with the operation of the growth chamber.
12. Keep the growth chamber space you are using clean and sanitary. If necessary coordinate with other users of the same chamber.
- 13. Monitor plants regularly for insect damage and diseases and report any problems immediately to the plant facility manager/supervisor.**
14. Remove yellowed or dead leaf material on a regular basis to reduce breeding areas for pests, provided this does not conflict with the experiment.
15. All plants must be discarded and the growth chamber left clean and sanitary by the end date of the project (as noted on the space request form). If necessary coordinate the cleaning with other users

Section 10: Fee Structure for Growth Chamber Usage.

Growth Medium, grow pots, flats and trays will be provided for educational and research directly related to course work at no additional charge.

Excess supplies used for individual research projects will be charged to the purpose code designated for the research at the discretion of the Plant Growth Facility Manager.

Chambers with limited horticultural services and no supplies provided

Chamber ID	Chamber Features	Total shelf space
Chamber 1	Reach-in	24 ft./sq.
Chamber 2	Reach-in	24 ft./sq.
Chamber 3	Reach-in	16 ft./sq.
Chamber 4	Walk-in 10' x 15'	96 ft./sq.
Chamber 5	Walk-in 9'8" x 9'8", fluorescent and incandescent lighting	96 ft./sq.
Chamber 6	Walk-in 9'8" x 9'8"	96 ft./sq.
Chamber 7	Walk-in 9'8" x 9'8"	64 ft./sq.
Chamber 8	Reach-in (in growth room)	24 ft./sq.
Chamber 9	Reach-in	16 ft./sq.
Chamber 10	Reach-in Dew Chamber	Reserved for Evans

Growth Chamber User Fee Structure;

Beginning on 7/1/2014, all research projects requiring the use of growth chamber space will be charged a rate of \$10.00 per square foot of shelf space used. The growth chamber shelves are 8 ft. /sq. so the minimum monthly charge would be \$80.00 per month. Funds collected from growth chamber users will be placed into an account that will be used to fund any repairs or maintenance issues that may arise with the growth chambers located in the Fischer facility.

Section 11: Building Security

Access to the Plant Growth Facility is limited to authorized personnel only and must remain locked at all times. Visitors should be accompanied by a faculty or staff member.

Plant Growth Facility staff members are available 8:00 a.m.-4:30 p.m. Monday-Friday.

The front doors of Fischer Greenhouse are secured by Campus Security after 5 p.m.

Users requiring after hours/weekend access to the greenhouse or plant growth facility will be issued appropriate keys by the Plant and Soil Science Office located in #152 Townsend Hall. Persons issued keys are responsible for the security of the complex.