

Plants for Human Health

I N S T I T U T E

GREENHOUSE AND GROWTH CHAMBER POLICIES AND PROCEDURES

CONTACT INFORMATION

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Additional emergency contact information posted in each greenhouse and both sheds on the information boards.

FACILITIES

N.C. State University's Plants for Human Health Institute oversees controlled environment spaces, namely greenhouses and growth chambers, for plant growth and research.

- The greenhouse facilities are located at 417 Glenn Avenue, Kannapolis, NC. There are three double poly Quonsets, each offering 28 6-ft. x 14-ft. benches, for a total potential growing area of 2,353 square feet. The greenhouse is equipped with heaters, evaporative cooling pads, automatic irrigation and fertigation.
- Growth chambers are located in the N.C. State building at 600 Laureate Way. There are eight growth chambers with temperature and humidity control features. Each chamber is equipped with fluorescent lights which can be set to accommodate photoperiod requirements.

GENERAL

The greenhouses and growth chambers are facilities falling within the purview of the N.C. State Plants for Human Health Institute. With the cooperation of the Director for Business and Research Administration and the space use committee, the greenhouse operations technician (GOT) is responsible for providing for, instituting, and enforcing general policies and guidelines for use of the greenhouse and growth chamber facilities. The objective of these policies is to ensure that space in a controlled growing environment is available to university faculty, campus partners, and corporate interests, and that the space is used efficiently, appropriately, and safely.

The GOT is responsible for the day-to-day operations of the greenhouses, including providing for structural/equipment maintenance and replacement, handling requests and assignments for greenhouse and growth chamber space, pest management, managing the automated environmental control system and watering. The facilities maintenance supervisor assists with growth chamber maintenance.

POLICIES AND PROCEDURES

1. Space Allocation

N.C. State PHHI faculty have priority use of the greenhouse and growth chambers in accordance with the [Space Allocation Assignments](#). Additional space requests can be made by N.C. State faculty, and assigned space will be charged the approved lease rate. Campus partners may also lease space, as available. Lease terms are negotiated on a case-by-case basis.

The GOT must be made aware of all space request needs at least 1 month in advance of intended space use. Requests for short- or long-term space allocation must be made using a [Space Request Form](http://plantsforhumanhealth.ncsu.edu/contact/space-allocation-request-form/) (located online at <http://plantsforhumanhealth.ncsu.edu/contact/space-allocation-request-form/>). Every effort will be made to provide space to all those who need it. The maximum period of time for a request is 6 months, though space

requests can be renewed, if needed. The GOT will inform those requesting space of the space use approval and assignment within 10 working days of receiving the request. Greenhouse and growth chamber users will be charged for the space, services, and resources they use according to the approved lease rates. If you specify environmental conditions that preclude other users from using otherwise available greenhouse or growth chamber space, you may be charged for the entire greenhouse or growth chamber. Charges begin on the first day for which space has been reserved whether or not the project has begun to use the space. Invoices for space use are sent in March and September, with payment expected within 30 days.

Space request conflicts will be resolved by the Space Use Committee, based on justifications for space and recommendations of the GOT. As NCSU/PHHI funds the cost of maintenance and the greenhouse manager salary, associated faculty/staff are given priority for use of space. The same is true for the use of growth chambers. Researchers outside NCSU/PHHI can contract to rent space for no longer than a 6 month period, renewable if there is available space.

2. Orientation and Access

All regular, first time users of the greenhouse facilities are required to schedule an orientation session which stresses safe use of the greenhouse and associated growing environments. This session will introduce the user to the greenhouse facilities and include discussion/demonstration of correct procedures for lab/head house usage, disease and pest avoidance/control, and safety. Greenhouse users must view the Worker Protection Standard (WPS) video and submit a signed copy of the policies and operations statement to the GOT.

A gate key will be assigned to greenhouse users. It is the user's responsibility to make sure the gate is closed and locked when he/she is the last person to leave the greenhouse site. Emergency phone numbers are posted on the information board in the head house. Any greenhouse access keys issued to a user are to be returned promptly to the GOT when access to the greenhouse is no longer needed.

3. Materials & Supplies, Services Provided and Maintenance Responsibilities

Greenhouse facility users are expected to purchase their own expendable research supplies. For a detailed list, see [Greenhouse and Growth Chamber Responsibilities Chart](#).

When plants are placed in the greenhouse or growth chamber and watering by the GOT is desired, a [Plant Care Request Form](#) must be submitted. If you desire a special pesticide application, a [Pesticide Application Request Form](#) must be submitted.

Greenhouse users are responsible for cleanup of any tables or benches used in the head house. During the project and upon project completion, users are required to clean their respective greenhouse space from leaves, soil or other debris. Weed control of the greenhouse floors is performed, as needed, by the GOT. Weeds growing in project materials are the responsibility of the individual researchers and should be maintained in as weed-free a condition as possible. The GOT will handle sanitation of growing areas between projects. For greenhouse and growth chamber users, all plants and soil no longer needed for an experiment must be promptly moved outside to the dumpster or otherwise disposed of as safety protocol dictates.

Growth chamber users should abide by the watering guidelines for proper hose use. There are no drains inside the chambers, therefore excess watering can lead to standing water outside the chamber in the hallway, creating a fall hazard. The main valve on each floor should be closed and the pressure in the hose relieved after each use. For more information, refer to the document, [Using the Hose](#).

4. Pesticide Applications/Safety/Entrance Protocol

The GOT is responsible for maintaining acceptable insect/disease control. Users assist as scouts and are asked to report any infestations immediately. Most pesticide applications require closure of only the greenhouse being sprayed, most commonly for 4 or 12 hours. Pesticide warning signs will be posted on greenhouse entrance doors.

Any chemical applications to plants for pest control must be applied by a licensed pesticide applicator or under the GOT's direct supervision. Failure to abide by this can result in loss of privileges. If you desire a special pesticide application, a Pesticide Application Request Form should be submitted.

The GOT must be notified immediately of any chemical spill or other safety hazards. Users should familiarize themselves with the safety information available on the information board located in the head house.

Because of the variety of ongoing projects and potential for contamination, a strict greenhouse entrance protocol is recommended at the university greenhouses. Please restrict your movements to general use areas and your specific research area. Acquire permission to enter other areas with the specific researcher or GOT. Be aware that if your work day includes a visit to a farm field or other greenhouse facility, or anywhere else where you might come in contact with pests that can be transported, you can introduce pests to your greenhouse space. It is advisable to arrange to visit your greenhouse or growth chamber first.

5. Greenhouse Improvements

Minor improvements or modifications of any greenhouse facility require approval of the GOT. In most cases, the GOT will perform these modifications or assist with these tasks if available. A Work Request Form should be submitted for approval and scheduling. No large implements or devices may be brought into the greenhouse without prior GOT approval. Major improvements or modifications of any greenhouse facility require approval from PHHI administration in coordination with the Space Use Committee.

6. Health and Safety

Users are expected to follow safe work practices and abide posted health/safety signage. Users will notify the GOT or staff of any potentially harmful practices or concerns when noted. Violators of safe work habits are subject to revocation of greenhouse access privileges.

- Only materials needed for research projects are to be stored at the greenhouse and only in areas designated by the GOT.
- Materials should not be stored on usable bench space or under the greenhouse benches. Greenhouse aisles must be kept clear of obstructions to allow for safe and unobstructed passage.
- No smoking or alcohol use is permitted in the greenhouse facility.
- Be aware that there are fire ants present at the greenhouse site. Fire ant control measures will be taken, but always be watchful to avoid mounds. Wasps are also problematic around the sheds in spring and summer.
- A first aid kit is mounted on the wall inside the door of the tool shed. In the event of a major injury, call 911 or go to CMC-Kannapolis, the nearest Emergency facility.

Hold Harmless Agreement

If the space is rendered unsuitable for the conduct of the user's activity by reason of Force Majeure, NC State and the user are released from their obligations under the contract and neither party shall be responsible for any damages sustained and have no further recourse against the other party. Force Majeure shall mean fire, earthquake, hurricane, flood, act of God, epidemics or pandemics, nuclear explosions, strikes, work stoppages, or other labor disturbances, riots or civil commotions, war or other act of any foreign nation, terrorism, power of government, or governmental agency or authority, or any other cause like or unlike any cause mentioned which is beyond the control of NC State.

In consideration for use of the space, the undersigned shall indemnify and hold harmless NC State, its trustees, officers, employees and agents from any liability, losses, costs, damages, claims or causes of action of any kind or nature whatsoever, and expenses, including attorney's fees, arising from or proximately caused by my use of the space. If user is a department, division, or other unit of NC STATE, the above and all requirements included within it are null and do not become part of the agreement between the parties. If user is a state or federal government agency, indemnification is not required where prohibited by law.

Initial each item, as applicable.

_____ I have read, understood, and agree to abide by these policies.

_____ I received a greenhouse gate key.

_____ I completed WPS training.

Signature of Greenhouse User

Printed Name

Date

Greenhouse User Email

STATUS: student-grad/undergrad, staff, faculty

Campus Phone

Cell Phone

Name of Principal Investigator/Supervisor