

Colorado State University Plant Growth Facilities
FY 2019 Greenhouse Use Policy
Effective July 1, 2018

Introduction

The intent of this document is to define the reservation process, introduce rates and to serve as a guide for daily operations and procedures of the Plant Growth Facilities (PGF). This document is subject to annual review and approval by the Greenhouse Steering Committee and Business Financial Services prior to release.

The PGF is an Institutional Core Facility, which supports the strategic goals of the Colorado State University (CSU) research mission. The facility offers short and long-term greenhouse space, growth chambers, cold storage rooms, laboratories, and short-term warehouse storage to facilitate research for faculty, staff and students from colleges including the College of Agricultural Science, Warner College of Natural Resources and the College of Natural Sciences. In addition to providing research facilities, PGF supports several Horticulture, Biology and Natural Resource classes and clubs. PGF provides research and teaching facilities to approximately 45 research labs and over 300 users each semester.

The PGF main facility has over 42,000 ft² of space, including 7 research bays, 14 growth chambers, laboratories and a public Conservatory. Our south facility (aka 'south houses') has over 18,000 ft² of Biosecurity Level II rated greenhouses, a growth chamber area that can house up to 27 chambers, a laboratory and an autoclave area.

The PGF is opened 8:30am-5:00pm M-F during the school year and 8:30-4:30 during the summer. The staff consists of the PGF Manager (Tammy Brenner), Assistant Manager (Paul Freebury) and up to 3 students. Staff is available during regular business hours; but may not always be in the office. If a user has questions, concerns or problems, they can reach out to staff via email or phone. The PGF staff does their best to respond to emails within one business day.

Tammy Brenner reports directly to Gene Kelly, the Deputy Director of the Agricultural Experimental Station. The PGF Steering Committee consists of department heads of Biology (BIO), Bioagricultural Science and Pest Management (BSPM), Forest and Rangeland Stewardship (FRS), Horticulture and Landscape Architecture (HLA) & Soil and Crops Science (SCS).

Contact Information

Main office: 491-4170

Email: cas_greenhouse@mail.colostate.edu

Emergencies, Text: 970-986-9427

CSU Facilities Dispatch: 491-0077

PGF website: <http://plantgrowthfacilities.agsci.colostate.edu/>

Trellis (reservations/space requests): <http://colostate.trellismanager.com>

Facility Access

To ensure safety of personnel, research material and equipment, all PGF users are required to complete user training prior to access approval:

- 1. ANNUAL Worker Protection Standard (WPS) training**
- 2. Trellis registration**
- 3. Greenhouse orientation**

PGF offers monthly training sessions that include all access requirements above. The scheduled times are posted outside of the main office or users can email PGF for information about upcoming training sessions. Annual WPS training is mandatory by the EPA for all PGF users.

New users:

All new users are required to complete WPS training, Trellis registration and orientation BEFORE access to PGF is granted. Full training takes around 45 minutes. Upon completion, the user's CSU ID card will be activated, and access will be granted to PGF within 24 hours. If a new user is waiting for their CSU ID card to be issued, a visitor pass may be checked out. Contact PGF for details.

Current users:

WPS training is required once per year. Current users must attend a scheduled WPS training session *before* their WPS expiration date. PGF sends out WPS expiration reminders each semester to users whose WPS is expiring. Additionally, users can determine their WPS expiration date by accessing their Trellis account. Renewing WPS (*no Trellis registration or orientation*) takes approximately 25 minutes.

It is a **user's responsibility** to remain in WPS compliance. In the event an individual is unable to attend a training session, PGF can arrange an individual training session. *This is by appointment only.* Users failing to renew WPS certification are subject to loss of facility access.

Space Requests

All PGF spaces (*greenhouses, growth chambers, labs*) are available to CSU-affiliated researchers via reservation, on a first-come, first serve basis. As space permits, greenhouses are also available to students and clubs at CSU rates. Greenhouses are available to private industry at commercial rates, however, CSU limits space available to 10% of total greenhouse space. Due to high demand growth chambers are **not** available to private industry.

Prospective users are encouraged to contact PGF for information about available space, project needs and reservation instructions-*prior to reserving space*. Growth chambers are rarely available immediately and there is often a waitlist.

Upon completion of all access requirements, a user may reserve greenhouse or growth chamber space through Trellis Greenhouse Management System (<http://colostate.trellismanager.com/>). Verbal discussion or email requests are not accepted as a reservation. Users having difficulty navigating Trellis are encouraged to contact PGF for assistance.

Space is reserved based on units (1 Greenhouse unit=1/4th bench, 1 Growth Chamber unit=1 growth chamber). The recommended amount of space is the *maximum* space required, for the duration of project. Availability of additional units is not guaranteed, therefore reserving more than estimated is recommended. Acquiring an empty nearby unit is prohibited and is subjected to immediate disposal of plant material and equipment.

Space fees begin on the date of the reservation, regardless of occupancy. If a project is delayed users should notify PGF to discuss options. Renewal of a space must be made before the expiration date selected in Trellis. Failure to do so may result in a loss of greenhouse space. If end-date extension is required, contact management to make arrangements. If space is not vacated by the end date fees will continue to accrue.

Due to limited supply and high demand of growth chambers, growth chamber “squatting” is prohibited. Users must be conducting active research in all PGF-owned chambers. If a growth chamber is found to be empty of live plant material **for three consecutive months**, the reservation is subject to termination.

Rates and Fees

Facility usage rates and fees are necessary in order to cover our operating, repair and maintenance expenses. Usage rates are reviewed on an annual basis and are subjected to approval from the Greenhouse Steering Committee and Business Financial Services. Users can expect a rate increase of 3-5% annually to cover the cost of inflation and anticipated repairs. Greenhouse usage is calculated and billed monthly through Quali. PGF accepts valid CSU accounts or personal checks for payment. Credit cards are not accepted.

Greenhouse rates are a flat rate across all greenhouse bays (main facility and biosecurity ‘south houses’) and are charged by the unit. Growth chamber rates are flat across all growth chambers, with the exception of #9 (walk-in chamber) and are charged per unit. Rates begin on the start date of reservation, regardless of whether or not user is occupying the yet.

Monthly Rates

Main and South greenhouse Rate: \$25.80/unit

Growth Chamber Rate: \$166/month

EGC walk-in Rate: \$332/month

Services, Supplies & Amenities (included in rate)

Services

- Pest and disease management - *cultural, biological and chemical*
- Environmental control, set-point adjustments and seasonal photoperiod adjustment - *users are NOT permitted to adjust set-points or equipment*
- Greenhouse, warehouse and growth chamber cleaning - *sweeping, trash and compost removal, filter changes*
- Repair and maintenance of greenhouse & growth chamber equipment-*shade, pad wall, exhaust fans, lighting, bulb replacement, hose replacements**
- Autoclaving of materials in *main* PGF facility and non-transgenic material - *South house users are responsible for autoclaving of all material*
- Washing and UV sterilization of 1 gallon pots - *users must bring dirty pots to dirty pot rack in warehouse*
- UV Sterilization of specialty pots - *per request, contact PGF to request*
- Refilling and cleaning of south house footbaths
- Basic irrigation system set-up

***Disclaimer:** *PGF does our best to prevent equipment failure or malfunctions. However, due to the age of the facility and limited resources, prevention is not always possible. Therefore, PGF is not responsible for research time and materials lost due to equipment failure or malfunction. If research has been lost (due to growth chamber or greenhouse overheating, hail damage, water damage, etc.), PGF can assist user in filing an insurance claim.*

Warehouse Supplies**

- Promix potting mix (HP & BX)-*use potting mix in white bins next to the pallets of soil in the warehouse before opening a new bag*
- Soil amendments (*perlite, vermiculite, greensgrade*-located in white bins)
- 1-gallon nursery pots
- Conetainers and racks (*limited supply*)
- Carts & wagons (*short term only, must be returned by the end of day*)

Stock Room Supplies** (*across from main office, supplies must be signed out on sheet provided*)

- Flats: hole, no hole and web
- 2.5, 3.5 & 4.5" pots
- Domes (*small & large*)
- Flat liners of various configurations
- Misc. tools (*short-term use only*)
- Assorted specialized research equipment (*scales, EC meter, etc*)

****These items are for current, fee-paying PGF facility users only and must be used IN the PGF facility (no off-premises use). Non-fee paying labs are welcome to purchase supplies for a fee. Non-fee paying users must select "lab use" when signing out supplies.**

Corridor Supplies *(available in both Main facility & South)*

- Slow-release fertilizer (*Osmocote*)
- 200 ppm diluted fertilizer (*15-5-15*)
- White plant labels
- Nitrile Gloves, dust masks
- Bamboo stakes of various sizes

Amenities *(all amenities are available on a first-come, first-serve basis and space is not guaranteed)*

- Drying Oven (*located on the east side of the headhouse*)
- Mist benches (*112a and 104 greenhouses-contact PGF for available location*)
- Warehouse Storage (*for long-term researchers only*)

Plant Lending

PGF Conservatory contains a diverse plant collection for teaching and enjoyment. With advanced manager approval, plant material can be made available for identification, air layering or grafting. **PGF is not responsible for watering plants while they are checked out and users are responsible for returning plant material in original condition.**

Fee-for-Service & Supplies *(not included in rate)*

PGF staff, when available, can assist with projects such as plant propagation, equipment modification, complex irrigation set-ups or weekend watering. These services are charged at hourly rate based on complexity of task.

Student Hourly rate: \$10/hour

Professional hourly rate: \$25/hour

Special Orders

Researchers are encouraged to purchase materials through their labs. If PGF is able to acquire materials through our vendors, a 10% administrative charge is assessed. Requests can be made through a special order request form (*see PGF website for form*). Verbal or e-mail special order requests are not accepted.

Users not *currently* renting space in PGF are welcome to purchase supplies (*soil, pots, flats, etc.*), but must provide a valid University account number and check out material under 'NON-PGF USE'. A price list of supplies is located in the stockroom.

Greenhouse User Responsibilities

PGF makes every effort to accommodate the needs of all users. However, the success of research ultimately depends on the individual researcher. This section covers the responsibilities of PGF users including CSU Faculty, Research Associates, students and non-affiliated users.

Permission from greenhouse manager is required prior to installation of any equipment that may interfere with greenhouse controls or functions. Examples include irrigation systems, shade cloth, lights of any sort, humidification systems, shade & black out curtains, tanks, trellis or cages.

Equipment on greenhouse benches is permissible during active research only, is included in space assessment and will be charged accordingly. Materials, equipment and plant material left on benches after a user has vacated and final billing is complete are subject to disposal.

The following are responsibilities of all PGF Users. PGF monitors the facility regularly to ensure all policies are being upheld. In the event of a policy violation, the User is notified via email and given a deadline to correct the violation. If violations continue to occur, the user's PI and Department head will be notified. In the event the situation is not remedied within the given time period, the user will be asked to leave facility and will lose all access and privileges associated with PGF.

Responsibilities:

- Complete annual WPS training, Trellis registration & orientation
- Complete space reservations and renewals in a timely manner
- Ensure all plants are inspected by PGF staff *before* moving into facility (*please arrange plant inspection by emailing staff every time new plants are brought into the facility*)
- Notify PGF staff with pest concerns, plant health and facility concerns (*too hot, too cold, odd noises, trash & compost full, etc.*)
- Notify PGF, in advance, of tours, labs or classes so PGF can ensure there are no scheduling conflicts
- Utilize potting media in white bins first (located throughout facility), before opening a new bag
- Label items not on bench or in a designated storage area. **Unlabeled items are subjects to immediate disposal**
- Read all email communications from PGF - PGF does not send out unnecessary emails.
- Discard non-transgenic plant material and soil in brown COMPOST bins (located in all the corridors) **Note: Transgenic plant material must be disposed of according to permit**
- When discarding sand, greensgrade or field soil, discard **directly into outside compost Do not place in TRASH CANS!**
- Main greenhouse autoclave users:** label autoclave material with lab information and required cycle
 - fill bags only half-way, overfilled bags are heavy and can break!
- South house autoclave users:** are required to dispose of all material according to protocols specific to project and **must autoclave their own material**-once autoclaved, PGF will dispose of it in trash
- Close all doors, - doors propped open can quickly increase a pest population and reduce performance of greenhouse climate controls
- Do not adjust Wadsworth Environmental Controls in greenhouses or settings on growth

- chambers – PGF is responsible for all environmental control adjustments
- Do not use greenhouse benches to transplant. Potting benches are provided in all corridors - just be sure to **clean up** after transplanting
 - Clean up after use of **potting bench, sinks and root washing station**
 - Weekly clean-up of bench space (remove dead plant material, trash on benches, etc.)
 - Vacate facility by pesticide application deadline-**NO EXCEPTIONS**
 - Notify PGF when a project is complete - PGF can advise on proper disposal of material and assist if needed
 - Contact PGF first with any repair or maintenance issues, PGF will send a request to Facilities-**DO NOT CONTACT FACILITIES FIRST**

Safety

General Safety

- Communicate with PGF staff if you see an unsafe condition or act
- Closed-toes shoes are suggested when working in greenhouse
- No food or drink allowed in areas where pesticides have been applied
- No sharing of ID cards
- No relocating, watering or disruption of other users research material
- Autoclave users must be trained prior to use
- Keycard codes or lock box codes are not to be distributed
- Use of chemicals requires permission by management
- Application of experimental chemicals require advanced approval from management.
- In the event of an emergency closure, such as severe weather, all non-essential personnel must vacate the greenhouses. The management will complete emergency watering only
- If there are strange smells, noises or activity, notify PFG immediately or call dispatch (491-0077)
- PGF will contact facilities with all repair and maintenance issues

Pesticide Safety

PGF makes every effort to ensure the facility is safe and operational. Safety information, including, Safety Data Sheets (SDS) and pesticide application records are located near the restrooms of PGF. The EPA requires anyone utilizing the greenhouse facility to receive basic pesticide information before they work with treated agricultural plants. Thus, all users are required to complete an annual Worker Protection Standard (WPS) training to reduce risks associated with pesticide exposure and injuries. A written record of pesticide applications is posted at the Central Posting Area (located near the restrooms) for at least 30 days after the restricted-entry interval expires, or at least 30 days after the end of the application.

Pesticide applications are an integrated part of our pest management system. Unless PGF is notified in advance, **all plant material is subject to pesticide applications**. An email notification is sent to all users **1-day** before pesticide is to be applied. If there is a research conflict with the pesticide application, notify PGF ASAP to discuss options.

It is the user's responsibility read emails from PGF and to vacate the facility by the designated time. If a user is repeatedly found in the facility after the time designated for pesticide application, the user is subject to loss of building access.

The pesticide application sign "**Keep Out**" is posted on all pesticide treated areas with a re-entry interval (REI) of *over* 4 hours. By EPA regulations, unless a user is a certified pesticide applicator, a user cannot enter the greenhouse until the "**Keep Out**" sign is removed by a *certified pesticide applicator, regardless of whether the REI has expired.*

In general, pesticide applications with 4 hour REI's occur after 4pm during the middle of the week (Tuesday, Wednesday or Thursday).

Biohazard and Transgenic Plant Material

With prior approval from the PGF manager, biohazard and transgenic research is permitted specifically within the biosecurity greenhouses (south houses). The Primary Investigator (PI) is responsible for adhering to all permit regulations, protocols and procedures *specific* to their permit. The PI is also responsible for ensuring all personnel are following all safety practices and containment procedures provided in the NIH Guidelines (<https://osp.od.nih.gov/biotechnology/nih-guidelines/>).

All personnel working with biohazard or transgenic material are responsible for properly bagging, sealing and autoclaving material. PGF will discard autoclaved material, but is not responsible for autoclaving biohazard or transgenic material. PI's are responsible for training all staff on proper disposal of material. All users needing to use the autoclave must be trained by PGF on proper use of the autoclave. Contact PGF for autoclave training.

Hemp

PGF has a Research and Development permit with the Colorado Department of Agriculture (CDA) to grow Industrial Hemp (Permit # 69781). There are specific greenhouse bays and growth chambers in which hemp can be grown. Growing hemp at PGF requires prior approval. Researchers are responsible for submitting all required CDA pre-planting, planting and harvest forms to the CDA as well as submitting a copy to PGF within the timeline of CDA regulations. Contact PGF for information about this process or visit: <https://www.colorado.gov/pacific/agplants/industrial-hemp> for more information.