Interim Growth Chamber Use Policy
College of Agriculture & Life Sciences
Cornell University

Last Updated: March 2, 2009
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Introduction and Mission Statement</td>
<td>3/2/09</td>
</tr>
<tr>
<td>2.0</td>
<td>Growth Chamber Management Structure</td>
<td>3/2/09</td>
</tr>
<tr>
<td>3.0</td>
<td>Contact Information</td>
<td>3/2/09</td>
</tr>
<tr>
<td>4.0</td>
<td>Growth Chamber Space Requests</td>
<td>3/2/09</td>
</tr>
<tr>
<td>5.0</td>
<td>Fees</td>
<td>3/2/09</td>
</tr>
<tr>
<td>6.0</td>
<td>Annual Renewal of Space Requests</td>
<td>3/2/09</td>
</tr>
<tr>
<td>7.0</td>
<td>Exit Date</td>
<td>3/2/09</td>
</tr>
<tr>
<td>8.0</td>
<td>Space Held in Reserve</td>
<td>3/2/09</td>
</tr>
<tr>
<td>9.0</td>
<td>Services Provided by the Growth Chamber Crew</td>
<td>3/2/09</td>
</tr>
<tr>
<td>10.0</td>
<td>Supplies Provided</td>
<td>3/2/09</td>
</tr>
<tr>
<td>11.0</td>
<td>Growth Chamber Users’ Responsibilities</td>
<td>3/2/09</td>
</tr>
<tr>
<td>12.0</td>
<td>Communication</td>
<td>3/2/09</td>
</tr>
<tr>
<td>13.0</td>
<td>Transferring Plants to and from the Growth Chambers</td>
<td>3/2/09</td>
</tr>
<tr>
<td>14.0</td>
<td>Housekeeping</td>
<td>3/2/09</td>
</tr>
<tr>
<td>15.0</td>
<td>General Safety</td>
<td>3/2/09</td>
</tr>
<tr>
<td>16.0</td>
<td>Biohazardous and Transgenic Plant Materials</td>
<td>3/2/09</td>
</tr>
<tr>
<td>17.0</td>
<td>Keys</td>
<td>3/2/09</td>
</tr>
<tr>
<td>18.0</td>
<td>When Things Go Wrong</td>
<td>3/2/09</td>
</tr>
<tr>
<td>19.0</td>
<td>When Things Go Right</td>
<td>3/2/09</td>
</tr>
<tr>
<td>20.0</td>
<td>Chemical Use</td>
<td>3/2/09</td>
</tr>
<tr>
<td>Apx A</td>
<td>Plant Growth Facility Site Plans</td>
<td>3/2/09</td>
</tr>
</tbody>
</table>
1.0 Introduction and Mission Statement

This interim document is intended to define policy for the CALS growth chambers at Ithaca, inform facility users, and serve as a guide for day to day growth chamber operations. While there may be some policy and operational differences among the individual growth chamber facilities, they are all managed in adherence to this general policy. This interim policy is effective as of April 1, 2009.

Scope

This policy applies to those growth chambers on the CALS Ithaca campus that are managed by the Cornell University Agricultural Experiment Station for general use by Cornell-affiliated programs, and departmental or program controlled growth chambers that are serviced by the CALS Growth Chamber Maintenance Crew.

Mission

To provide the highest quality services and facilities in support of the University's teaching, research, and extension programs.

Vision

To be a world-class plant care institution through continuous improvements in facilities, dedication to service, and employee development.

Focus

Service orientation and attention to the needs of all growth chamber users.
2.0 Growth Chamber Management Structure

- The plant growth facilities manager recommends greenhouse and growth chamber policy to and review facility space request trends with the CALS administration.
- The Plant Growth Facilities Faculty Advisory Committee evaluates and ratifies CALS greenhouse and growth chamber policy.
- Refer to Section 3.0 for personnel contact information.
3.0 Contact Information

Cornell Police:

**Emergency – 911.** 24-hour/day service
Police, Fire, or Medical
For any situation in which there is an immediate concern to preserve life or property

Non-emergency – 255-1111.  24-hour/day
Police and security-related services for the Cornell community

Environmental Health and Safety:

255-8200 for 24-hour/day response to emergencies including chemical spills and environmental contamination. Provides chemical safety training and fire safety education.

Growth Chamber Maintenance Crew Office:

255-7891 to report growth chamber alarms or malfunctions during business hours. After hours, or if your emergency call is unanswered, call the Facilities Customer Service number listed below.

Facilities Customer Service:

255-5322 to report urgent problems with building and infrastructure services, such as flooding or broken water lines.

Growth Chamber Management:

Nick Van Eck (Growth Chamber Supervisor) NJV1 at cornell.edu, 255-8697
After hours 229-0094 or 266-0831

Andy Leed (Plant Growth Facilities Manager) ARL6 at cornell.edu, 254-7266
After hours 227-4595 or 659-3469
4.0 Growth Chamber Space and Maintenance Requests

- As of the publication date of this document, the following growth chambers will be allocated by CUAES for general use by Cornell-affiliated programs:

Chambers 1-9, 21-30 at Dimock Laboratory, rooms B05 and 150
Chambers 50-57, 67-69, 72-88, 141-144, 146, 147 at Guterman Bioclimatic Laboratory, rooms 119 and 139.
Chambers 11-20, 40 at Kenneth Post Laboratory, rooms B02 and 102
Chambers 31-34, 36-39 at VN Laboratory, room B01.
Chambers 45-47, 48* at New Insectary, rooms 114, B07 and B09.
Chambers 65, 70, 71, 108, 115, 119, 122-125 at Bradfield Hall, rooms G-12, 103, 205A.
Chambers 129, 130, at Plant Science Building, room G06.
Chambers 100-107 at Muenscher* Laboratory, room 101.

*chambers pumped down and shut off

This list is subject to change.

- The CUAES staff (the CALS Growth Chamber Crew) also provides maintenance and repair services for additional growth chambers on the CALS Ithaca campus, by arrangement and as resources permit.
- Requests for growth chamber space or maintenance must be made to the growth chamber supervisor or the plant growth facilities manager before space can be allocated or maintenance services provided.
- Prospective growth chamber users are encouraged to contact the growth chamber supervisor or the plant growth facilities manager to discuss their needs prior to submitting a formal space request.
- Users must provide a valid University account number before occupying the assigned space.
- Growth chamber space will be assigned on a first-come first-served basis, consistent with policies governing the specific facility requested.
- Requests having special requirements, or for multiple chambers, may not be able to be filled without considerable delay. In these cases early consultation with the growth chamber supervisor or the plant growth facilities manager is particularly important.
- Requests for maintenance of growth chambers not in the pool allocated by CUAES, as listed above, will be considered on a case by case basis and accepted only if resources are available to perform the necessary services. There will be a charge for start up and initial services required to repair and recondition units in poor repair.
5.0 Fees

- Growth chamber use charges are collected to offset a portion of expenses for supplies, equipment, and personnel. Space charges are set by the CALS Administration in consultation with the Plant Growth Facility Faculty Advisory Committee and the plant growth facilities manager.

- Until July 1, 2009, charges for growth chamber maintenance will remain at the historic rates. As of July 1, 2009, growth chamber space charges will be calculated at described below.

- Growth chamber use charges are levied based on the size of the chamber.

- Growth chamber use charges are calculated on a monthly basis and billed for at the end of each calendar quarter.

- For chambers allocated by CUAES, use charges are the sum of two components:
  - **Base Charge**
    - $15.00 per month.
  - **Area Charge**
    - By the total interior floor and shelf area of the chamber:
      - $0.60/ft²/month

- The following table indicates the total monthly charge for various growth chamber models allocated by CUAES and available for general use. Charges for models not shown will be calculated by the method described above.

- These rates are current at the revision date of this document, but are subject to change.

- Additional charges may be levied for extraordinary repairs and maintenance necessitated by equipment abuse by chamber users (see section 9.0).

- A fee may be charged for early re-lamping at the request of the chamber user (see section 9.1).

- Charges for repair and regularly scheduled maintenance of growth chambers serviced by the CALS Growth Chamber Crew, but not allocated by CUAES (departmental or program controlled), will be determined on a case by case basis. Factors such as unit type, size, age, condition and location will be considered. Whenever a chamber is added or reinstated to the CALS Growth Chamber maintenance list, a $100.00 maintenance initiation charge will be levied. To request a quotation for maintenance of departmentally or program controlled growth chambers, contact the growth chamber supervisor.
### After July 1, 2009

<table>
<thead>
<tr>
<th>Chamber Model</th>
<th>Floor + Shelf Area</th>
<th>Monthly Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGC M-4</td>
<td>10 ft²</td>
<td>$21.00</td>
</tr>
<tr>
<td>ECG M-1</td>
<td>96 ft²</td>
<td>$72.60</td>
</tr>
<tr>
<td>Sherer CEL 63-10</td>
<td>9 ft²</td>
<td>$20.40</td>
</tr>
<tr>
<td>Sherer CEL 37-14</td>
<td>14 ft²</td>
<td>$23.40</td>
</tr>
<tr>
<td>Sherer W500-H</td>
<td>40 ft²</td>
<td>$39.00</td>
</tr>
<tr>
<td>Conviron PGW36</td>
<td>36 ft²</td>
<td>$36.60</td>
</tr>
<tr>
<td>Vesgro 908</td>
<td>68 ft²</td>
<td>$55.80</td>
</tr>
</tbody>
</table>
6.0 **Annual Renewal of Space Requests**

- Long-term users of a growth chamber (greater than one year) must renew their space requests annually at the anniversary date. Contact the growth chamber supervisor to arrange a renewal and update project information as requested.
- Failure to renew the space request in a timely manner may result in the space being assigned to another user.
7.0 Exit Date

- In order to provide for efficient space allocation and the orderly transition from one growth chamber user to the next, users are asked to provide an exit date with their space requests.
- If it becomes apparent that a project will extend beyond the stated exit date, contact the growth chamber supervisor as soon as possible. Extension of the exit date may not be possible if a commitment has been made to provide the space to another user.
- Growth chamber users will be held to the stated exit date if another user is waiting to use the space.
- Users vacating growth chamber space before their stated exit date will continue to be charged until the stated exit date or until the growth chamber supervisor is notified that the chamber is ready and available for other users.
- Users anticipating long-term occupancy (over one year) with an indefinite exit date should so indicate when requesting growth chamber space.
- When the completion date of a long term project is determined, the space request must be renewed with an exit date as soon as possible.
- Growth chambers are extremely energy intensive to operate. The use of growth chambers will be monitored closely to minimize the times that they are running needlessly. To help in this effort, please have your plants ready to put into the chamber soon after your start date. Notify the chamber crew or growth chamber supervisor immediately when your experiment ends so that the chamber can be turned off.
8.0 **Space Held in Reserve**

- To promote the fullest utilization of the College’s limited and valuable growth chamber facilities, unoccupied areas held in reserve at a user’s request *will be charged for* as if the space were occupied.
  - The fee for unoccupied space will equal the standard applicable growth chamber use charge.
  - An exception to this is a period of up to 4 weeks before the user moves into an area vacated by another user.
  - Users may request to retain control of specific chambers. They must pay the full maintenance fee for the chambers, even if those chambers are sometimes empty.
  - Users wishing to reserve an unoccupied space for longer periods may ask the growth chamber supervisor to attempt to find a short-term user for the interim. There is, however, no guarantee that such an attempt will be successful.
9.0 Services Provided by the Growth Chamber Maintenance Crew

All normal maintenance and repair required to keep growth chambers operating within specification will be provided. Additional charges may be levied for extraordinary repairs and maintenance necessitated by equipment abuse by chamber users.

9.1 Growth Chamber Maintenance

- Visiting the growth chamber and monitoring equipment performance frequently, as appropriate for the type and condition of the unit.
- Preventative maintenance.
- Diagnosis and repair or replacement of failed components.
- Setting and adjustment of all chamber environmental controls.
- Re-lamping on a scheduled basis, near the end of the useful life of the lamps.
- Early re-lamping at the request of the user will be performed as soon as practicably possible. In cases where significant useful life of the replaced lamps (tubes, bulbs) remains, there will be a prorated charge for the replacement components.

9.2 Plant Care

- Generally, all plant care is the responsibility of the growth chamber user.
- Exceptionally, and by prior arrangement, limited plant care may be provided by the CALS Greenhouses staff. Contact the plant growth facilities manager with questions.
- Pest and disease scouting and consultation will be provided greenhouse staff upon request, as resources allow.
- Pest and disease control services for plants in growth chambers may be available from greenhouse personnel where practical and as resources allow. These services will be charged for at a rate commensurate with the costs incurred. Note that safety concerns, CALS policy and legal requirements preclude the application of most pesticide in CALS growth chambers, and moving plants to a space suitable for pesticide application may not be practical.
10.0 Supplies Provided

All supplies needed for normal growth chamber equipment operation, maintenance and repair will be provided by the Growth Chamber Crew at no additional cost to the user.

*Plant growing materials, such as pots, trays, potting media, stakes, tags and markers are not included in the growth chamber space charges.* It is the responsibility of the chamber user to provide these supplies, as well as watering cans and other tools needed to grow plants and conduct experiments.

By request, the following routine supplies will be provided by the CALS Greenhouse operations at an **additional charge**:

- selected sizes and styles of bamboo stakes, twist ties and pot labels
- plastic trays with various cell pack inserts
- 4” and 6” pots
- 1, 2 and 3 gallon nursery pots
- selected cell trays
- Plant growth media mixes:
  - Soilless
  - Soil-based
- Media components:
  - Vermiculite
  - Perlite
  - Peat
- Biocontrols and other beneficial organisms
- Other supplies may be available

**NOTE:** Contact greenhouse staff or the plant growth facilities manager for details regarding supply use and location.
11.0 Growth Chamber Users’ Responsibilities

Growth chamber users must share the responsibility for successful operation of the facility with the support staff. Open communication regarding equipment function and program needs will facilitate optimum maintenance, reduce problems and promote productive relationships between users and staff.

*All growth chamber users should bear in mind their responsibilities to their colleagues who work in shared facilities. Proper care of equipment and prompt action to prevent, detect and correct plant pest and disease outbreaks are fundamental requirements for use of the CALS growth chamber and greenhouse facilities.*

Growth chamber users are financially responsible for all aspects of project-specific growth chamber or research equipment. Permission must be obtained from the plant growth facilities manager prior to installing equipment as it could interfere with growth chamber controls and function, or the work of subsequent facility users. Examples include racks, shelving, humidification systems, additional lights of any sort, mist systems, tanks and trellises.

**User responsibilities include:**

- Thoughtfully providing information concerning the growth chamber space request (see Section 4.0) with particular attention to the following:
  - space requirements
  - exact environmental parameters required
  - use of gases, such as carbon dioxide or ethylene, that may affect plants in nearby growth chambers
  - intended use of plant pathogens or pests
  - likelihood of introducing any plant pathogens or pests on incoming plant material
  - start up date
  - exit date
- Spacing plants, equipment and apparatus properly to ensure proper air movement, access for watering and pest scouting.
- Communicating concerns and observations regarding growth chamber equipment function promptly to the growth chamber supervisor or Growth Chamber Crew members.
- Communicating plant care problems (pests and infectious diseases) promptly to the growth chamber supervisor, plant growth facilities manager or appropriate greenhouse staff.
- Keeping growth chamber and work areas sanitary and orderly.
- Taking care to keep potting soil out of drains.
• Terminating experiments and discarding plants in a timely manner.
• Providing proper bags for autoclaving plant material when necessary.
• Communicating with the greenhouse supervisor or plant growth facilities manager **BEFORE** transferring any plant material into the CALS greenhouses (Section 13.0). Blanket approvals to establish protocols for recurring transfers are possible.
• Receiving clearance from the plant growth facilities manager prior to installation or placement of project-specific equipment in the growth chambers.
12.0 Communication

- So that the Growth Chamber Crew can best address users’ needs, please promptly inform the growth chamber supervisor or a Growth Chamber Crew member of:
  - alarms
  - malfunctioning equipment
  - any situation that you think may require attention

- To prevent the spread of plant pests and diseases amongst the greenhouses and growth chambers, please promptly inform the growth chamber supervisor of:
  - Known or undiagnosed potentially transmissible plant diseases in a growth chamber
  - pests on plants

- Users should respond without delay to queries or requests from Growth Chamber Crew staff.

- Notify the growth chamber supervisor promptly of changes in project requirements.
13.0 Transferring Plants to and from the Growth Chambers

Movement of plant material is one of the primary methods by which plant pests and diseases are spread between plant growth facilities. These pests and diseases can be extremely difficult to control, and may lead to the destruction of valuable plant material, negative impact on research and teaching programs, with significant cost to the University. All plant growth facility users are responsible for following established protocols for plant movement in and out of CALS facilities.

13.1 Bringing Plants into the Growth Chambers

- Incoming plants must be inspected for pests and diseases. Ask the growth chamber supervisor, plant growth facilities manager or a greenhouse staff member for assistance if you do not have the necessary training.
- Pest control measures may be required before moving plants into the assigned growth chamber.
- Note that safety concerns, CALS policy and legal requirements preclude the application of most pesticide in CALS growth chambers. Moving plants to a space suitable for pesticide application is often not practical, and such space may not be available. Introduction of pests or disease into a growth chamber may result in plants unfit for the intended purpose, loss of experimental data and no recourse other than destruction of the plant material.
- In certain cases of pest infestation or disease, plants may not be allowed into the growth chamber, or may be reassigned to a growth chamber specifically dedicated to housing such material.

13.2 Transferring Plants to the CALS Greenhouses

- The greenhouse supervisor or plant growth facilities manager must be given reasonable advance notice before plants are brought into the greenhouses.
- Incoming plants must be inspected for pests and diseases by the greenhouse supervisor, plant growth facilities manager or their designees. Trained and qualified growth chamber or greenhouse users may receive such designation – inquire.
- Pest control measures or isolation may be required before moving plants into the assigned greenhouse.
- In certain cases of pest infestation or disease, plants may not be allowed into the greenhouses.
- If plants are brought into the greenhouses without advance notification, it cannot be guaranteed that they will receive care.
14.0 Housekeeping

14.1 General

Integrated Pest and Disease Management starts with clean plant growth facilities. Users are required to assist with general clean up to maintain a safe, sanitary, and orderly work environment for fellow researchers and support staff.

All general clean up in growth chambers is the responsibility of the user.

General housekeeping requirements for users are:

- Clean worktables and/or potting benches after potting.
- Clean floors, racks, shelves and benches during and after terminating experiments.
- Dead plant materials and potting media, as well as live plants, can harbor pests. Promptly discard unneeded plant material, either directly to outdoor compost bins or in covered compost cans where provided. Replace lids to reduce insect and disease potential. In locations where no compost collection containers are present, use covered trash cans or take materials directly to waste collection dumpsters.
- Clean sinks after each use and limit the amount of soil going down drains.

14.2 Storage

Storage space within the growth chamber facilities is very limited. Please contact the growth chamber supervisor to discuss storage options. Items left in the growth chamber facilities without prior approval may be removed.
15.0 General Safety

- Safety takes the highest priority at Cornell.
- Communicate with the growth chamber supervisor of plant growth facilities manager when you see an unsafe condition or act.
- Cooperate with the facility managers to ensure your own safety, as well as that of your colleagues.
- Know the location of all safety equipment, including fire extinguishers, emergency showers and eyewashes, phones, and first aid kits.
- Know the emergency evacuation procedure for your area.
- Know where to find safety information, including material safety data sheets and pesticide labels.
- Know where emergency phone numbers are posted.
- Closed-toed shoes must be worn.
- No food or drinks are allowed in plant growth areas or areas of possible pesticide contamination.
- No smoking is allowed in plant growth areas.
- Attend Worker Protection Standard training if you will work with pesticide-treated plant materials.
- Employees and students handling pesticide-treated plant material are strongly encouraged to wear gloves and to wash their hands after working in a greenhouse.
- Only a commercial pesticide apprentice, certified commercial technician, or certified commercial pesticide applicator may make pesticide applications at Cornell. All pesticide applications in CALS Ithaca plant growth facilities must be pre-approved by the plant growth facilities manager.
16.0 Biohazardous and Transgenic Plant Materials

All research involving transgenic plants must be registered with the Institutional Biosafety Committee (IBC). For more information, visit http://www.osp.cornell.edu/Compliance/IBC.html.

Certain plants must be autoclaved before disposal, including those that are:

- transgenic
- virus-infected
- legally quarantined
- otherwise biologically hazardous
- otherwise required to be autoclave by research protocols

Project personnel are responsible for:

- purchasing autoclave bags;
- bagging hazardous plant material;
- ensuring that the material is properly autoclaved, and
- depositing the autoclaved bags directly into dumpsters, not into building garbage cans.

Autoclave users must be trained and must follow facility scheduling procedures.

Autoclave bags with biohazard symbols or wording must not be used.
17.0 Keys

- Requests for keys should be directed to the growth chamber supervisor. See section 3.0 for contact information.
- A security deposit is required.
- A record is kept of all keys issued to provide improved security and a tracking method for lost keys.
- Facility keys must NOT be copied.
- Keys are assigned to individuals, not groups. If multiple individuals within a group need to access a plant growth facility during periods when a key is required, each should request a key.
- A charge will be made for lost keys.
18.0 When Things Go Wrong

If there is an immediate concern to preserve life or property, call 911.

Caring for the wide variety and vintages of growth chambers on the CALS Ithaca campus requires a broad range of specialized technical skills and knowledge by all Growth Chamber Maintenance Crew staff. The staff members are trained and experienced, and are here to provide service and assistance to all growth chamber users. In situations where service does not meet expectations, communication failure is most likely the problem. If your expectations are unmet, we ask that you share your concern with the growth chamber supervisor or plant growth facility manager. The supervisor and manager are responsible for coverage of the facility and can be reached at the addresses and numbers listed in Section 3.0 of this policy.
19.0 When Things Go Right

Year round coverage for sensitive and specialized plant growth chambers can be quite demanding, and we know that the reliability and dedication of the support staff who bear the brunt of this load is appreciated. Please take the time to express your appreciation for a job well done to the support person in your area, or his/her supervisor.
20.0 Chemical Use

No chemical may be taken into the growth chambers, greenhouses or associated facilities without prior consent of the facility supervisor or plant growth facilities manager. Permission to use chemicals is temporary and only those that are being actively used (at least once per month) may be stored in the growth chambers or greenhouses. Chemicals used less frequently must be transported to and from the growth chamber or greenhouse for each use unless special arrangement is made with the facility supervisor or manager.

It is the user’s responsibility to ensure that all applicable chemical labeling, signage, notification, transportation, storage, exposure, and usage laws and regulations are fully complied with.

The plant growth facilities manager may ask that University Environmental Health and Safety personnel be consulted before giving permission for use of potentially hazardous materials.

Growth chamber and greenhouse users must:

- Contact the growth chamber supervisor, greenhouse supervisor or plant growth facilities manager before bringing any chemicals into the growth chamber, greenhouse or associated non-laboratory areas such as headhouses, hallways and storage cabinets.
- Comply with all applicable OSHA Hazard Communication Standard (29 CFR 1910.1200) requirements, including those for labeling, Material Safety Data Sheets (MSDSs), and inventories. Refer to the fact sheet “Using Chemicals in CALS Greenhouses” for guidance.
- Label containers with owner’s name and telephone number.
- Work with the growth chamber supervisor, greenhouse supervisor, or plant growth facilities manager to ensure that Material Safety Data Sheets are readily accessible to all employees.
- Work with the growth chamber supervisor, greenhouse supervisor, or plant growth facilities manager to maintain an up to date on-site inventory of all chemicals used or stored at the facility.
Growth Chamber Use Policy

Appendix A: Site Plans

Cornell Ithaca Campus
Caldwell Road Greenhouse Complex
Tower Road Greenhouse Complex
and
Associated Buildings Housing Growth Chambers