

Division of Agriculture
PMGS-96-1
Issued Feb. 23, 1996

**HARRY R. ROSEN ALTERNATIVE PEST
CONTROL CENTER (RAPC)**

Management Policy and Users' Manual

Introduction

The Harry R. Rosen Alternative Pest Control Center (RAPC) at the University of Arkansas, Fayetteville was developed to provide laboratories, equipment and greenhouse space for research and teaching in areas of plant sciences emphasizing non-chemical methods of pest control on crop plants. The RAPC also provides a conservatory in which classes can be held to demonstrate the science integral to modern plant sciences.

Policy outlined in this manual was developed to allow the efficient and effective use of the RAPC while maintaining the integrity of the facility. The limited space available for operations along with the complexity and sophistication of the facility and the nature of the scientific research has necessitated the policies in this manual. As experience in using and managing the facility is gained, policies will be modified to improve the efficiency and effectiveness of the use of the RAPC. The management committee requests your cooperation in applying these policies and sincerely solicits your suggestions and constructive criticisms.

The management of the facility will be conducted by the RAPC Management Committee appointed by the Dean, Dale Bumpers College of Agricultural, Food and Life Sciences (DBCAFLS), and Associate Vice President for Agriculture (AVPA). The RAPC Management Committee is comprised of four appointed faculty members from departments involved in alternative pest control science, the Associate Director of the Arkansas Agricultural Experiment Station and the RAPC Manager and is responsible directly to the Dean/AVPA.

Mission

The mission of the Harry R. Rosen Alternative Pest Control Center (RAPC) is the development, evaluation and implementation of effective, economical biological alternatives for management of ever-changing insect, nematode, plant disease and weed problems. This multidisciplinary effort will develop and transfer credible, timely and objective alternative pest control information and technology to students, researchers, extension personnel, the agricultural community, alternative pest control industries, regulatory agencies and public and environmental interest groups within the state of Arkansas, the nation and the world.

Objectives

1. To explore natural and managed ecosystems for collection, isolation and identification of biological alternatives for pest control.
2. To conduct biological and ecological evaluations of promising native, exotic and genetically improved biological alternatives, including crop plants.
3. To develop procedures for production, formulation and application of promising biological alternatives and provide technology transfer to industry.
4. To evaluate performance and integrate effective biological alternatives into agricultural production systems.
5. To assess the environmental impact resulting from the integration of biological alternatives into agricultural production systems.
6. To provide an environment and facilities for students to study and gain knowledge in biological alternatives for pest control in crop plants.

I. RESEARCH FACILITIES

A. Plant Growth Facilities

Space and facility assignments for research requiring plant growth facilities in the RAPC will be made in response to RAPC Use Proposals submitted on forms available in the Experiment Station office (see Appendices A and B). The RAPC Management Committee will act on each proposal within two weeks of its receipt in the Experiment Station office. Space and facilities will then be assigned for approved proposals according to application date and availability of space. Upon approval of each space request, the researcher will receive a notice of approval. Space will be allocated to projects best fitting the mission and objectives of the Rosen Center for Alternative Pest Control.

A.1. Space Assignments

Assignment of space in one of the various types of RAPC plant growth facilities will be made by the RAPC Management Committee for specific time intervals, at the end of which use of that space must be relinquished and the space vacated. There will be no permanent assignments of space; however, length of assignments may vary based on the character of individual experiments. Unless reassigned in response to a new proposal, space not vacated on schedule will be cleared and the unauthorized material contained therein will be disposed of by the RAPC Manager with a fee levied for this service. An extension can be obtained only by submission of a new RAPC use proposal at least one month in advance of the original termination date. There will be no sub-letting of RAPC space assigned to faculty. Unused or unneeded space reverts back to RAPC for reassignment. Under no circumstances may modifications be made to any part of the RAPC facilities without authorization of the Management Committee. The facilities must be restored to the original condition at the end of the assigned use period. Facilities will not be assigned to researchers in arrears on use or cleaning fees. Projects requiring facilities for greater than a year must undergo an RAPC Management Committee review in December of each year.

A.2. Maintenance Fees

Use of all RAPC research greenhouse and growth chamber space will be on a prepaid fee basis according to the attached fee schedule (Sec. I-H). Research faculty are advised to include such fees in the budgets of grant proposals and in the budget planning process for continuing research activities such as Arkansas Agricultural Experiment Station projects, etc.

A.3. Specific Plant Growth Facilities

A.3.a. Greenhouse Units

Three ranges of greenhouses are available within the facility. The west range (five large units) is generally dedicated to research activities within the Division. The center range (four large units) is generally dedicated to teaching activities associated with courses taught by the College. The east range (seven units; four small and three large) will be generally dedicated to work on recombinant plants and microbes or strains of plants and microbes that may require containment under NIH, USDA/APHIS or STATE policies. (See Sec. IV for policy on use of radiation and recombinant DNA.)

In addition to above-stated policy, space assignment in greenhouse units will include the following: On-going use in a given unit will have priority over proposed use of additional vacant space in that unit in the case of incompatibility of photoperiod, temperature, disease, etc. Users assigned partial space in a unit are not free to pick and choose their area, nor are they free to rotate their activity from one area to another within the unit. However, their desires, if made known, will be taken into consideration.

A.3.b. Growth Chambers

In addition to policy stated in sections above, growth chamber installation and use assignments will be in accordance with the following:

Installation - The RAPC has purchased and installed growth chambers for general use. Requests for placement of existing growth chambers in the RAPC by faculty can be made to the RAPC Management Committee. Approval will depend on availability of space, inspection of the growth chamber and uniformity with existing equipment and control devices. The owner of existing or new equipment is responsible for all installation charges.

Units owned by RAPC - These units will remain under the management of the RAPC Management Committee at all times and will be assigned for use based on request proposals as described above for greenhouse space.

Units owned by others - Used growth chambers previously installed elsewhere and in functioning condition and new chambers (0-3 years old) under warranty and installed in the RAPC will come under the management of the RAPC Management Committee according to the following schedule. The owner of the new growth chambers will have sole use for five years subsequent to installation and will not be assessed fees during that time. The owner of used growth chambers from 3-10 years old will have sole use for three years and will not be assessed fees during that time. Owners of growth chambers older than 10 years will have unlimited use of such chambers for one year and will not be assessed fees during that period. The Rosen Center can utilize and assign space (and collect fees) on growth chambers not being utilized by the donor. The Rosen Center reserves the right to remove unauthorized equipment and to decide when to discard equipment beyond economical repair. The Rosen Center will maintain and repair all donated growth chambers from the date of transfer. It is expected that, when the growth chambers are transferred to the RAPC, they will be in good working order.

All growth chambers placed in the Rosen Center become the property of the Center, and transfer is irrevocable.

B. Conservatory

The conservatory will be managed by the Dean, DBCAFLS. Requests to schedule classes in the conservatory should be made to the Dean's Office.

C. Research Laboratories

Research laboratories were designed for very special uses; hence, their assignment will be restricted to research consistent with the designed use and mission for that facility. These facilities will remain under jurisdiction of the

RAPC Management Committee, and their use will be assigned as described below. Additional policy is as follows:

Use and installation of new or replacement equipment or any alteration of laboratories will be under the direction of the RAPC Management Committee. Major equipment items have been installed by the RAPC. All items not originally furnished by the RAPC and general maintenance requirements and service contracts in relation to research programs in the laboratories will be the responsibility of the user(s) and user(s) Department(s).

All research laboratories will be under the jurisdiction of the RAPC Management Committee and the Dean/AVPA. These are primary laboratories, and ongoing research that meets the mission of the RAPC will have priority in space assignment over new research.

The research laboratories include: Molecular Biology and Tissue Culture Laboratory; Biological Control of Weeds, Fermentation and Restricted Environment Laboratories; Biological Control of Soil-Borne Pathogens; and Insect Laboratory.

D. Non-assigned RAPC Support and Storage Facilities

The facilities listed below are for general support of RAPC research and will remain under the management of the RAPC Management Committee. Access to and use of these facilities is through the RAPC Manager by previous arrangement only. Additional use conditions are stated elsewhere in this manual.

D.1. Dark Room - The RAPC provides a complete dark room facility including copy and enlarger rooms. Several items have been placed into the facility and will be considered general use items after installation and are available for use by all users of the laboratory, growth chamber and greenhouse facilities. It is the responsibility of users to maintain the facility. Users not complying with good general laboratory practices will be barred from further use. Any cleaning or maintenance required as a result of misuse will be charged to the account of the offending users.

D.2. Lockers - Assignment of lockers in rest rooms will be according to the following policy. There will be no permanent or long-term assignment to this space. Lockers will be assigned in conjunction with space assignments in greenhouses and growth chambers. Assignments will be limited in duration to time allocated in greenhouses or growth chambers. It will be the responsibilities of users to provide locks, and the RAPC assumes no liability against loss.

D.3. Indoor Soil/Growth Media Bins - These storage bins will be under the management of the facility Manager. A single bin, identified, is provided for each greenhouse module. Additional bins are provided for growth chambers. Provision of potting soil and artificial growth media is addressed elsewhere in this manual. Under no circumstances will storage of soil or growth media be permitted in corridors, stairwells, hallways or other non-designated areas without prior approval of the RAPC Manager.

D.4. Outdoor Soil Storage - Several storage bins will be provided for storage of soils outside the headhouse complex. These bins will be under the management of the facility Manager. Additional use conditions are stated elsewhere in this manual.

D.5. Soil Sterilizers and Steamers - An autoclave in the research headhouse is provided for use in sterilizing soil. The autoclave will be used as available. It is the responsibility of users to provide soil and to remove autoclaved soil when sterilizations are concluded. This autoclave can be

used by persons other than users of the RAPC facilities with approval of the RAPC Manager.

A soil pasteurization system has also been provided for users and non-users of the RAPC. Pasteurized soils are not to be stored in steamer carts and are to be removed at the earliest possible time. Pasteurized soils cannot be stored in the RAPC or outside the RAPC without the express knowledge of the RAPC Management Committee or the Manager.

Storage only of benchmark soils and soils that are the subjects of research is allowed.

Sterilization of soils is not permitted in other facilities in the RAPC.

- D.6. Chemical Storage - The chemical storage and mixing rooms will remain under management of the RAPC Management Committee and Manager and are to be used to store registered materials needed for work in the RAPC only. Non-regulated toxic chemicals are not permitted at any time. Access to and use of these rooms will be through the RAPC Manager by previous arrangement only. Additional use conditions are stated elsewhere in this manual. At the conclusion of allocated time in the RAPC, all users will remove their unused chemicals. All chemicals placed in storage must be labeled with name of the Principal Investigator, name of chemical and date placed in the facility.
- D.7. Pot Storage - No separate rooms for storage of non-contaminated and contaminated (by pests or pesticides) pots are provided in the RAPC. Policy on provision of pots, flats, etc., are addressed elsewhere in this manual.
- D.8. Cold Storage Rooms - Two cold rooms will remain under the management of the RAPC Management Committee and Manager and are to be used for temporary storage of items. One room is reserved for seed storage, and the other is reserved for soil and tissue storage. Access to and use of these rooms will be through the RAPC Manager by previous arrangement only. Non-users of the RAPC may use the rooms as space permits with prior approval of the RAPC Manager. Additional use conditions are stated elsewhere in this manual.
- D.9. Cabinets (plant processing) - The locking cabinets in the plant processing area will remain under the control of the RAPC Management Committee and Manager.
- D.10. Open Storage Rooms (138, 139) - These rooms will remain under the management of the RAPC Manager. They are not for common use.
- E. Mechanical, Electrical and Custodial Rooms
These rooms will remain under the control of the Physical Plant. They are off limits to all RAPC users.
- F. Offices. The RAPC Manager will be assigned an office. This office houses computer controls for the facilities and equipment. This office complex is for use only by the RAPC Manager and staff.
Offices on the second floor are assigned to faculty and primary research support staff associated with the laboratories in the RAPC. Initial assignments are 205, 206, 207 and 208 to Plant Pathology, 203 and 204 to Tissue Culture and 202 to Entomology.
Furnishings within all offices have been provided by the RAPC. They are not to be replaced, altered or moved without approval of the RAPC Management Committee or Dean/AVPA.

- G. Conference Room. The conference room has been furnished by the RAPC. Its principal function is to provide reasonable facilities for college and departmental meetings, conferences and examinations. Furnishings are not to be removed, replaced or altered without approval of the RAPC Management Committee and the Dean/AVPA.
Scheduling of meetings, conferences, etc. in the conference room will be a function of the office of the Dean/AVPA.
- H. Schedule of Use Fees for Maintenance Pool Funds
In order to maintain greenhouses, growth chambers and growth rooms, users will be charged a monthly fee based on the square footage used. Fees will be collected at the assignment of the space for the project. Fees will be used to provide maintenance and purchase light bulbs, storage bins, etc. for these facilities. They will not be used to provide support for research laboratories.
Square footage charges will apply to greenhouse ranges and growth chambers. The following fee schedule is in effect until further notice:
- H.1. Greenhouse ranges - \$0.50/sq ft/month (actual bench space)
 - H.2. Growth chambers - \$5.00/sq ft /month
 - H.2.a. RAPC-owned
No priority use agreements permitted beyond the mission and objectives of the RAPC.
 - H.2.b. Chamber previously owned by other providers:
 - H.2.b.(1) New Growth Chambers (0-3 years age and under warranty).
Priority use by owner for five years after placement in RAPC.
No user fees charged to owner for first five years from date of installation; thereafter owner will be subject to square footage charges upon his/her use of the growth chamber. Users of growth chambers, other than owners, will be charged according to the square footage of growth space allocated.
RAPC assumes all maintenance and repair costs from time of placement in the facility.
 - H.2.b.(2) Used Growth Chambers
Installation implies permanent placement in the RAPC.
Priority use by owner without fee charges for three years from placement for chambers 3-10 years old and one year for chambers over 10 years old.
User fee charges will be applied after one or three years to all previous owners of used growth chambers.
 - H.2.b.(3) Installation costs are the responsibility of the owner/donor.
 - H.2.b.(4) RAPC will be responsible for all maintenance and repair costs from time of placement in the facility.
 - H.3. A fee of \$75 per incident will be assessed for cleaning by RAPC staff of vacated greenhouse or growth chamber space.

II. TEACHING FACILITIES

Teaching at the graduate and undergraduate levels is an important function of the RAPC facility. Teaching facilities include a laboratory classroom (conservatory) that seats 24 students and four greenhouse sections with benchspace. Preferential use of the RAPC facility is for teaching courses for University credit that utilize living plant material, relate to the plant sciences and/or complement research relating to research activities in RAPC. Use of teaching facilities for non-credit courses will be considered on an individual and “space-available” basis.

A. Space Assignment

A.1. Conservatory

Scheduling of classes in the conservatory will be made by the Associate Dean of the DBCAFLS in response to specific written requests from the faculty and in consultation with RAPC Management Committee.

Faculty wishing to utilize conservatory space in RAPC for teaching must submit a proposal (available in RAPC or Dean’s Office) to request and justify use of the space. Proposals must be received by the Associate Dean, DBCAFLS, at least one academic semester prior to the semester courses will be taught (see Appendix C).

A.2. Teaching Greenhouse

Space assignments in the teaching greenhouse will be made by the RAPC Management Committee in response to requests from faculty. Use of the teaching greenhouse is not limited to those using the RAPC conservatory but is open to other faculty members that utilize plant material for their classes. Special problem classes for graduate and undergraduate students will be considered on an individual and “space-available” basis.

Faculty wishing to utilize the teaching greenhouse must submit a proposal to request and describe the use of the space at least one semester prior to intended start date. Forms (see Appendix C) are available from RAPC office or from the Associate Dean of DBCAFLS.

A.3. Storage Space in Conservatory

Cabinet storage space in the conservatory will be assigned by the RAPC Management Committee to complement course and instructor needs. Conservatory storage requests should be made with the Conservatory Usage proposal and submitted to the Associate Dean.

B. User’s Fee

There will be no fees for utilizing conservatory or greenhouse space for teaching in the RAPC.

C. General Operating Rules for Teaching Conservatory and Teaching Greenhouse

1. Under no circumstances may modifications be made to any part of the RAPC, including temporary or permanent mounting of educational materials on walls, etc. without prior consent of the RAPC Manager.
2. Faculty are responsible for working with students, graduate students and employees to ensure that laboratory and greenhouse policies and procedures are followed closely.
3. Faculty are responsible for seeing that students and workers clean all areas in which they work (laboratory and greenhouse). Failure to follow this policy will be grounds for rejection of space assignment.

4. The RAPC Manager is responsible for overall operations. Users should coordinate with the RAPC Manager in cleaning, returning and storage of equipment used for teaching.
5. Instructors are responsible for providing pots, flats and potting soil used in the facility.
6. Insect and disease control will be the responsibility of the instructor or his designee. The instructor is also responsible for ensuring that pesticides are applied properly in accordance with labeled rates, plant species, protective clothing, excess pesticide disposal and notification of non-entry into treated greenhouse areas. A list of approved chemicals for pest control on specific plant species is available from the RAPC Manager. Deviation from the approved list of chemicals must have prior approval of the RAPC Manager.
7. Individuals should in no case interfere with or modify studies conducted in the facility. This includes lighting, temperature control and other environmental factors. Instructors should contact the RAPC Manager if control systems need adjusting or are working improperly.
8. Teaching projects in the greenhouses must be identified by name of project leader and phone number. Unidentified plant material will be disposed of immediately.
9. Faculty members or their designee are responsible for day-to-day care of their experiments, including watering and fertilizing.
10. Plant material should be kept weed-free and weeds disposed of in a garbage can.
11. Janitorial service will be provided in the conservatory. However, each instructor is responsible for leaving the facilities clean and presentable for the next class. All plant material should be removed from the laboratory; benchtops should be cleaned of reagents, and microscopes and other laboratory equipment should be properly stored in assigned cabinet space; benchtops should be free from soil, plant debris, chemicals, etc. Instructors are also responsible for keeping their assigned greenhouse space clean during use and upon termination of activities.
12. Failure to comply with these policies and procedures will result in revocation of use privileges by the Dean/AVPA.

III. GENERAL RAPC OPERATING RULES

1. The RAPC will be periodically inspected by the Management Committee and the Dean/AVPA or designee for rule compliance. These inspections may not be announced.
2. Priority for research space assignments in this facility will be for research in alternative pest control. Use in other areas may be assigned on an “as-available” basis.
3. Key assignments for use of facilities in RAPC will be made by the RAPC Manager and approved by the Dean/AVPA. Entry and exit after normal working hours will be controlled by electronic card access.
4. Any modifications, temporary or permanent, made to any part of the RAPC must be prior approved by the RAPC Management Committee.
5. The RAPC Manager is responsible for overall operations, application and adherence of policies and general oversight of the facility and equipment.
6. Project leaders with assigned space are responsible for informing their employees and graduate students of the policies and proper procedures for using the facility and are responsible for their actions.
7. Project leaders are responsible for seeing that their assigned space is kept clean and orderly. Failure to follow this policy will be grounds for revocation of space assignment.
8. Laboratory and greenhouse work space must be used efficiently and effectively.
9. All facility equipment must be cleaned and stored in its proper place after use.
10. When sharing facility space, individual researchers will not interfere with other studies being conducted in the facility. This includes lighting, watering, temperature control, etc. Any conflicts should be reported to the RAPC Manager.
11. All care of plant materials (watering, fertilization, weed control, etc.) will be the responsibility of the user.
12. All materials (soil, pots, chemicals, etc.) must be stored in an assigned space. **No materials will be stored under greenhouse benches.**
13. All chemicals stored within the RAPC facility must be labeled with name of the Principal Investigator, name of chemical and date placed in the facility.
14. The temperature and light conditions for each greenhouse section will be set by the RAPC Manager, and any changes must be by request to the Manager.
15. Soils, potting mixes, pots and fertilizers must be provided by the user. Storage space for such materials within the facility is limited and must be approved by the RAPC Manager.
16. Only approved pesticides may be used in the RAPC facility. All pesticide usage within the facility must be done by the user, with prior notification to the Manager.
17. All used soil and pots and plants for discard must be promptly removed from the facility by the user.
18. No trash or storage containers will be permitted in hallways in the RAPC or in greenhouses, headhouses or conservatory.
19. Any equipment malfunction or other operational problem should be immediately reported to the RAPC Manager.

20. The RAPC has been designated a tobacco-free facility. Use of tobacco is not permitted in the building or greenhouses.
21. All federal, state and University guidelines on use and disposal of hazardous and radioactive materials will be strictly enforced. Storage, use and disposal of such materials must be approved by the RAPC Manager.
22. Termination of Experiments
 - a. Researchers will be notified by the RAPC Management Committee one month before their assigned time is completed.
 - b. Upon termination of an experiment, the project leader is responsible for seeing that all plant material, soil and containers are removed from the growth area and disposed of in an appropriate manner.
 - c. If researchers do not vacate and clean their space when required, a fee will be assessed against their project budget.
23. An annual research report will be required from each user of the RAPC facility at the end of each calendar year. This report should outline progress made in research for the year. These reports will be combined into an overall annual report for the RAPC facility which will be submitted to the Dean/AVPA.

IV. GUIDELINES FOR USE OF RADIOISOTOPES AND RESEARCH INVOLVING RECOMBINANT DNA MOLECULES

Radiation Safety

It is the responsibility of all investigators using radioisotopes in their investigations to obtain all applicable approvals, equipment and inspections required by Federal, State, the University Office of Radiation Safety and the University Radiation Safety committee policies or requirements and to adhere to these or any other conditions imposed by these agencies or by the University.

Investigators using radioisotopes in the RAPC are also required to inform the RAPC Manager and Management Committee of their use and provide copies of all applications and approvals to the Manager. Any accidents involving radioisotopes are to be reported to the required authorities immediately and to the Manager of the RAPC as soon as possible after the accident.

Recombinant DNA

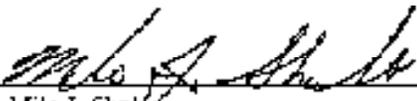
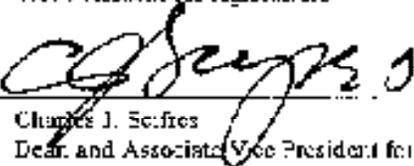
It is the responsibility of all investigators conducting research involving recombinant DNA molecules to obtain all applicable approvals, equipment and inspections required by Federal, State and the Institutional Biosafety Committee before conducting research in the RAPC and to adhere to any and all relevant guidelines imposed by the nature of their research and by these agencies. Copies of all applications and approvals must be submitted to the Manager and Management Committee before space can be allocated for this use.

The RAPC containment greenhouse facilities can be inspected at any time by the Manager or the Institutional Biosafety Committee at the request of the Management Committee or Principal Investigators. Research in the containment greenhouses is limited to Biosafety Levels approved by the Institutional Biosafety Committee for these facilities. All work conducted in shared greenhouse facilities will be conducted at the highest level required for projects in that individual greenhouse facility.

The Principal Investigators, as required in the NIH guidelines, are responsible for limiting access to their greenhouses, maintaining conditions suitable for recombinant DNA research and for acceptable disposal of contaminated plant, soil and potting materials as required by NIH guidelines.

Failure to follow accepted guidelines will result in termination of projects in the RAPC containment greenhouse facilities and disposal of all materials.

Approval

 _____ Milo J. Shult Vice President for Agriculture	 _____ Charles J. Scifres Dean and Associate Vice President for Agriculture - Research
2-23-96 Date	2-21-96 Date

**APPENDIX A
REQUEST FOR RESEARCH SPACE IN RAPC GREENHOUSES**

Principal Investigator: _____

Department: _____

Phone # of Responsible Person: Office _____ Home _____

Alternate #: Office _____ Home _____

Project Name: _____

Cost Center No.: _____ Supporting Agency: _____

Brief description of proposed research (objectives, plant species, treatments, chemical usage, etc.)

Biological containment required: Yes No

Minimum bench space required (Ft²): _____

Date to be initiated: _____ Terminated: _____

Special environmental requirements (temperature, lighting, etc.)

Graduate student research involved: Yes No

Name(s) of graduate students: _____

**APPENDIX B
GROWTH CHAMBER SPACE REQUEST**

Name of Principal Investigator: _____

Space Requested (estimate ft²): _____

Cost Center Number: _____

Date to be initiated: _____ Terminated: _____

Special needs (e.g. lighting, temperature, etc.):

Brief Description of research and justification for growth chamber space:

Grant support for the project: _____

Names of graduate students and other research personnel associated with the research:

**APPENDIX C
REQUEST FOR TEACHING SPACE IN RAPC
CONSERVATORY AND GREENHOUSE**

Instructor: _____ Department: _____

Office Phone: _____ Home Phone: _____

Course Title: _____

Course Number: _____ Year: _____ Semester: F W S

Project student enrollment: _____

Will you be using conservatory for classes/laboratories: Yes No

If yes, indicate days of week and time of class/lab: Mo Tu We Th Fr Sa Su

Times of class/lab: _____

Briefly describe how conservatory will be used:

Will you also be using teaching greenhouses? Yes No

If yes, minimum bench space required (ft²) at any one time during semester: _____

Date to be initiated: _____ Terminated: _____

Special environmental requirements (temperature, lighting, etc.)

Briefly describe how the greenhouse will be used in terms of teaching objectives, student involvement, etc.