Greenhouse and Plant Growth Facility User's Manual

Loyola University New Orleans

Revised: September 29, 2016

Introduction

The Department of Biological Sciences at Loyola University New Orleans maintains an 828 sq. ft. greenhouse, with two growing rooms, an adjoining headhouse including growth chamber room, and a 400 sq. ft. outdoor deck located on the 7th floor (roof top) of Monroe Hall. The greenhouse facility serves three missions: housing a teaching collection of plants, providing growing space for student projects and materials for teaching labs, and providing growing space for faculty-student research projects.

All greenhouse users are asked to coordinate their space requirements with the Greenhouse Committee. Requests for growing space for all student or faculty projects need to be made in writing, prior to starting the experiment, using the Greenhouse Space Request Form.

Allocation of greenhouse space is determined in part by space demands, project size, environmental requirements, past performance, utilization efficiency, sanitation, and cooperation.

All users (students and faculty) must agree to abide by the rules put forth in the Greenhouse User's Manual and their signatures on the Space Request Form will serve as evidence of agreement. There is no charge to use the greenhouse. Laboratory fees paid by students currently support some of the overhead costs and routine materials (soil, pots, etc.) for class use that are available in the headhouse. Researchers (students and faculty) are asked to use their research budgets for supplies.

Please note that at present, there is no Greenhouse Coordinator who oversees day-to-day operations of this facility. Thus, the responsibilities of a "Greenhouse Coordinator" listed below are currently covered by members of the Greenhouse Committee and student interns or volunteers. Unless otherwise indicated, individual faculty members and their students are responsible for the regular watering and care of the plants under their control.

Loyola Greenhouse Committee 2015
Dr. Paul Barnes (chair)
Dr. David White
Dr. Craig Hood
Mr. Mark Tobler

Section 1: Rules for all facilities

1. Consult the Greenhouse Committee before starting a new project.
2. The greenhouse bays are controlled by a fully automated system. Do **NOT** attempt to reprogram any controller. Please request changes from the Greenhouse Committee.
3. Please do **NOT** move any plants (even your own) without consulting the Greenhouse Coordinator.
4. The Greenhouse, Greenhouse Support Area (headhouse) and Growth Chamber Room should be kept free of contaminants (biological and/or chemical).
   4.1. There is NO SMOKING allowed in any facility including the deck.
   4.2. No field samples or equipment should be stored or processed in any area without prior approval from the Greenhouse Coordinator.
5. To prevent the spread of pests and pathogens use only fresh planting media, or media that has been thoroughly cleaned and/or sterilized (autoclaved). Compost should never be used in the greenhouse.
6. Use only new or cleaned, chemically sterilized pots or containers. Pots and flats may be sterilized with a bleach solution (follow posted procedure next to sinks).
7. Use clean tools. Tools should be wiped with alcohol before and after use.
8. Clean up after yourself:
   8.1. Remove soil and litter from your work area and spray the counter with a 10% bleach solution when you are done working
   8.2. Keep your growing area free from soil and leaf litter
   8.3. Never put soil back into the soil bins
   8.4. Dispose of dead plants and contaminate free soil in the composter
   8.5. Diseased and/or contaminated plants and growing media should be placed in trash bags and removed immediately from the growing facility
   8.6. Remove all materials at the end of your experiment
   8.7. Wash all containers with soapy water and sterilize with a bleach solution (follow posted procedure next to sinks).
9. Never use sinks without a strainer in the drain. <u>These sinks do not have soil traps</u>!
10. Do NOT rinse, sweep, or dispose of soil into the floor drains.
11. Turn off the hose when you are finished with it and replace it on the hanger if available or coil it next to the bib.
12. Close all cabinet doors/drawers, room doors and turn off lights when you are done for the day.
13. Do not prop open any doors for longer than is necessary to complete the immediate task.
14. Good bugs are living here! Please don't spray or kill anything. Pest control is coordinated by the Greenhouse Coordinator.
15. The greenhouse is for growing plants, NOT for storing supplies. No materials may be stored in the growing area. Permission to store materials in the head house area will be on a case-by-case basis. No storage is allowed on the work surfaces.

16. Initial rule violations will be discussed between the Greenhouse Coordinator, the user, and the user's supervisor (faculty mentor). Continued rule violations will be directed to the Greenhouse Committee and documented in writing (or by email) and sent to the user (and the user's supervisor) and to the Department Chairperson. Continued violations of greenhouse rules will result in forfeiture of greenhouse privileges.

Section 2: Procedures for Requesting Space

All requests for greenhouse space must be made in writing to the Greenhouse Committee, preferably at least 1 month prior to planting.

Please use the following protocol:

1. Initiate your request via email to the Greenhouse Coordinator.
2. Fill out the online Greenhouse Space Request Form which is available on the Biology Department webpage.
3. Formal discussion will occur between the user (user's supervisor) and the Greenhouse Committee.
4. Space allocation will be based on Section 3: Space Allocation Limitations, within this document.
5. Space allocation will be granted or denied in writing or email.
6. Any space allocation grievances should follow the protocol specified under Section 4: Space Allocation Grievances.
7. Greenhouse use may begin after receipt of written permission **AND** after all users and workers have had an orientation training session in the greenhouse.
8. Greenhouse space is not granted indefinitely. You must list an end date. All allocations will be reviewed annually, approximately on the anniversary date of the approved allocation.

Section 3: Space Allocation Limitations

1. The Teaching Collection cannot be regularly discarded and replaced.
2. Classroom (curricular) uses have priority during the academic year. This is for student research projects or growing stock plant materials for laboratory exercises. Other users may request unused space from the Greenhouse Committee.
3. Other members of the Loyola community may request space from the Greenhouse Committee. Space will be given as it is available on a first come, first served basis after all teaching, coursework, and research needs have been met.

Section 4: Space Allocation Grievances

1. Every effort will be made to accommodate all users.

2. In general, space will be allocated based on the priorities established here (Section 4 of Loyola University's Greenhouse Users Manual) in parts 3 through 7. Other considerations include past cooperation and adherence to the rules spelled out in this document. Space allocation limitations are spelled out in Section 3 (above).
3. When space for coursework becomes limited, priority will be given to the classes with the largest demand for space (typically the largest enrollment courses).
4. Classes for Biology and Environment Majors will be given priority over non-majors courses.
5. Grant-funded research will take priority over non-funded research. A project specifically designed to generate preliminary data for a grant application (but not yet funded) will be given special consideration on a case-by-case basis, but should generally receive a higher priority than a project with a more flexible time-line.
6. In the event that space conflicts cannot be resolved between the interested parties and the Greenhouse Committee, the Greenhouse Users Group will consider the options and propose a solution.
7. If the situation is still unresolved, the Department Chairperson will mediate the conflict OR declare a solution, at his or her discretion. If the Department Chairperson is one of the interested parties or is related to one of the interested parties, then the most senior, ***independent***, Biology Department faculty member will mediate OR declare a solution, at his or her discretion.

Section 5: The Greenhouse Coordinator (TBN)

The job of the greenhouse coordinator includes:

1. Working with multiple Department users to assign space in the growing area.
2. Determining, maintaining, and monitoring appropriate environmental settings and watering regimes throughout the greenhouse based on user requests, within the restrictions set by the teaching collection.
3. Attending to greenhouse maintenance and pest control (working with physical plant and outside vendors as needed).
4. Monitoring plant care for the teaching collection and classroom stock materials.
5. The Greenhouse Coordinator will only care for research projects when the sponsoring faculty member and/or student(s) are physically unable to perform those duties. Researchers requesting plant care must do so in writing and include a written protocol for care (watering, fertilizing, etc.) to the Greenhouse Coordinator.
6. Maintaining and developing the teaching collection to provide materials requested by the Department faculty and staff to supplement curriculum.
7. Stocking greenhouse supplies for the teaching collection. Stocking supplies for class materials or for faculty research projects will be done only when requested and should be paid for by the course coordinator or faculty mentor.

8. Assisting with other duties such as designing, planting, and monitoring research projects when specifically requested.

Section 6: Conditions and Definitions

Automated Systems: light, heating, and cooling are separately computer controlled.

Classroom projects/materials: Loyola's teaching mission dictates that space be available for growing classroom materials or class research projects. This use is anticipated to be larger during the academic year and much smaller for summer courses. During the academic year, a minimum of 2 benches will be maintained for classroom use.

Environmental settings: light, heating, and cooling. The greenhouses are cooled by automated evaporative cooling pads, which should keep temperatures close to ambient. Natural gas powered heaters are designed to automatically come on during cold spells. Supplemental lighting is provided by several HID lamps that can be programmed for specific daylengths.

Faculty research: Faculty research projects include those specifically designed to test hypotheses developed by Department faculty or staff. These projects may be part of a funded grant or aimed at generating data to support a grant application. The research mission does NOT include activities such as growing plants for sale, display, competition or food consumption.

Greenhouse Coordinator: A staff member of the Biology Department with advanced training in Botany, Agriculture, Horticulture, or similar Biological field whose task is to maintain a functional research and teaching greenhouse as specified above in Section 5.

Growing Space: Growing space in the greenhouse consists of 96 sq. ft. of bench space ((2) 8 ft. x 4 ft. and (2) 2 ft. x 4 ft. movable benches) per growing room. Floor space in the greenhouse measures 23 ft. x 18 ft, or approximately 414 sq. ft. per growing room.

Heating and Cooling: Heating and cooling settings are applied to the entire growing area. The Greenhouse Coordinator will determine, set, and maintain seasonally appropriate temperatures that accommodate the greatest diversity of plants in the growing space.

Lighting: Lighting conditions must be applied to the entire growing area. A shade curtain can filter ambient sunlight and metal-halide lamps can extend the photoperiod. While the filter or lamps are applied over the entire growing area, light availability varies throughout the greenhouse and varies throughout the year.

Nutrients: Fertilization is manual, using either tap water or de-ionized water in a watering can.

Teaching Collection: Due to the varied light and water requirements of plants kept in the teaching collection, they will occupy a variety of benches throughout the greenhouse. It may be difficult to condense these plants as space demands increase. The rare or slow-growing nature of these plants dictates that the teaching collection be guaranteed a minimum of greenhouse growing space.

Watering: Tap water is used to water plants and there is currently no automated watering system. Thus, all plants are watered by hand and watering schedules are determined by individual faculty and the Greenhouse Coordinator.