

I. Growing Facility Bench Space Allocation:

- A. Bench space within the Greenhouse is allocated on a first come first served basis, with priority given to research over any personal or garden plants.
- B. Individuals and groups must request space by filling out a request form online at <https://www.bio.upenn.edu/biopond/content/greenhouse-user-form>
- C. Requests should include the following information:
 - Reason for use e.g. course name(s) or research project description
 - Amount of space required
 - Types of plant material to be maintained
 - Will any outside material be brought in?
 - Duration of the project
 - Specific maintenance requirements e.g. special watering instructions, additional light requirements, special fertilizer needs, pesticide limitations, etc. (See A Note About Pesticide Use).
 - Account information for billing of supplies.
- D. All plants and material must be cleaned off the bench within one week after the project end date stated on the request form. For class material, all plants and material must be cleared from the bench by the end of the semester. If more time is required, a new request form must be filled out.

II. Growing Facilities Management:

A. Lighting:

- The greenhouse uses supplemental HID lighting above the benches.
- Lights in room A are on for 16 hours per day.
- Lights in room C are on for 12 hours per day.
- Additional lighting, provided by the user, can be plugged into a timer if required

B. Fertilization:

- Plants are fertilized once per week with 400 ppm Nitrogen solution. To maintain optimal plant growth a 15-5-15 cal-mg fertilizer is used every third week. Other weeks a 21-7-7 acid special fertilizer with complete macro and micro nutrients is used.
- For projects scheduled to last over 3 months, slow release fertilizer may be added to the pots if requested by the user.
- If plants are not to be fertilized the greenhouse user must indicate this on the user request form, and clearly communicate with the greenhouse staff.

III. Growing Facilities Maintenance Responsibilities:

A. Responsibilities of the Greenhouse Staff, unless otherwise stated on the user form:

- **Water** using a regimen of a balanced fertilizer, as described above, and clear water.
- **Scout for pests and disease** especially during the winter months.
- **Treat for pests and disease** based on plant value and other thresholds.
- **To require other tasks from the Greenhouse Staff** please indicate them on the request form.
- **Greenhouse staff will communicate any needs or concerns to the user as soon as possible.**

B. Responsibilities of Individuals and Groups utilizing facilities:

- **Send the following information to Greenhouse Staff for plant labels or supply your own pot identification (this may include tape on pots or labels placed in pots). All identification must include the following information:**
 - ◆ Plant name – please use the full Genus and specific epithet on at least one plant per crop.
 - ◆ Lab or project with which it is associated.
 - ◆ Any other necessary information.
 - ◆ Labels printed by the Greenhouse Staff will be charged at \$0.05 per label. Each pot needs a label, trays may be labeled with one tag per species in the tray. Please note the greenhouse will no longer be supplying blank tags.
 - ◆ Hand written tags must be written in pencil as all markers quickly wash off.
- **Check plants for pests** before giving them to Greenhouse Staff, including insects, mites, pathogens and weeds.
- **Coordinate with Greenhouse Staff to maintain plants in appropriately-sized pots.** Oversized pots leave extra space for weeds to grow. Undersized pots make it harder to prevent drought stress.
- **Remove plant material promptly** that is no longer needed in order to help reduce watering time, host plants for pests and soil area for weeds.
- **Notify greenhouse staff promptly** if there are any changes to your project, such as to the timeline or protocol.
- **Communicate any needs or concerns as soon as possible to a member of the Greenhouse Staff.**

IV. Use of the Head House or other Facilities for Research or Instruction:

A. General Rules

- Use only assigned materials.
- Brush off potting bench after work is complete. Use only brooms labeled for use on counters.
- Sweep floors using brooms located next to the eye wash station.
- Tools must be cleaned and put away in their proper locations.
- The sink under the cabinets with plates and cups is for hand and dishwashing only
- The large sink on the left side of the headhouse (between room C and B) is used for washing pots. Please do not leave any pots in that sink.
- Leave used pots stacked in or on top of the green trash can next to the large sink.
- If you fill the trash can, please tie the bag and leave it in a wheelbarrow in the hallway and replace with a new bag. New bags can be found on the bottom shelf of the shelving unit in a brown bin closest to the entrance to the greenhouse.

B. Access:

- The greenhouse will be open from 8:00am- 4:00pm Monday to Friday.
- Greenhouse will be locked outside these hours.
- If you require a key for access outside normal hours, please contact facilities.

V. Tools:

- A. Most greenhouse tools are available for use by students and professors. These include all tools in the red tool drawer.
- B. Personal Protective Equipment (PPE) may be required when using certain tools and is available in the Head House (safety glasses, dust masks, latex and nitrile gloves, earplugs, fabric and leather gloves). If using a tool or chemical and you are unsure if PPE is needed, please ask a Greenhouse Staff member.

- C. Tools must be cleaned and put away in their proper locations.
- D. Additional tools are available by request from the Kaskey Park equipment room.

VI. Supplies and Materials:

- A. Many materials including 4, 6 and 9" pots, flats with and without holes, and 32 and 72 cell inserts are used from a common greenhouse supply, without cost to the researcher, except in the following cases, when the cost of the requested material will be allocated to the research project:
 - When the user requires a particular container size or type of amendment that the Greenhouse Staff does not usually stock.
 - The quantity of a product required for the duration of a project is more than half of the minimum quantity that must be purchased:
 - ◆ Minimum purchase: 4" pots - 900, 6" pots - 440, 9" pots - 50.
 - ◆ Minimum quantity purchased for 32 and 72 cell inserts is 100.
- B. **Requesting Supplies and Materials:**
 - Courses or labs requiring **plant material** must provide **8 weeks prior notice** to allow for propagation or procurement. Ideally, all teaching material required for a semester should be requested before the start of the semester.
 - If material is needed for a project that is not normally stocked by the Greenhouse Staff please let the Greenhouse Staff know of the need as soon as possible.
- C. **Common Greenhouse Supplies:**
 - **Common supplies** are supplies used throughout the greenhouse as part of normal greenhouse operation. These include:
 - ◆ Beneficial insects
 - ◆ Fertilizer
 - ◆ Cleaning solution and tools
 - ◆ Pesticides
 - ◆ Plant health supplements
 - **Billing:**
 - ◆ When requesting bench space, a billing code for the project is required.
 - ◆ When products are purchased for the greenhouse that are common use, such as beneficial insects, pesticide or fertilizer, each account will be charged a portion of the cost based on the amount of greenhouse space they are using.
 - ◆ Percentage of greenhouse space used by a person or group will be determined once monthly.
 - ◆ Copies of purchases can be provided upon request.
 - ◆ The cost of printing tags will be billed when new tags are ordered, approximately every 6 months.
- D. **Potting Medium:**
 - **Potting medium** will be stocked by the Greenhouse Staff and will be billed on a per use basis.
 - **Labs will be charged** when stock is replenished; approximately every 6 months.
 - **Greenhouse users must record** and submit how much potting medium is used, to the best of their ability, each time an item is potted. A potting log will be located on the potting bench for recording potting medium use.
 - **Growth chamber users** must notify greenhouse staff when they take a bag of potting medium from the bunker.

VII. A Note About Pesticide Use:

- A. Beneficial insects are used to control insect pests as much as possible, they are our first option for controlling insect pests. If beneficial insects do not control the population horticultural oil or soap will be used to cause the least amount of harm to our beneficial insect population. If other less harmful methods are not successful, traditional pesticides will be used.
- B. The Greenhouse Staff uses pesticides on plants within the growing facilities on an as-needed basis throughout the year, though pest pressure in the indoor facilities is usually highest during the winter months. Unless pest pressure is determined to be high enough to warrant broader application, these are targeted to individual crops or groupings. Given the open layout of our facilities, there can be no expectation of a completely pesticide-free environment.
- C. If a user is concerned about pests on their plants and would like to discuss more intensive pesticide use on their crops for a specific project, a consultation with a member of the Greenhouse Staff can be arranged.
- D. Requests to limit pesticide use on particular crops should be made as part of the initial space allocation request. If limitations are required and control is not possible with reasonable alternative chemicals or methods, the Greenhouse Staff may require that a plant or crop be removed from the indoor growing facility to prevent further spread of the pest.
- E. A record of all pesticide use for the growing areas and gardens is kept in the Head House, as required by law. If you require additional information about a particular product, a binder containing the labels for products in the Chemical Storage Room is also kept in the Head House.