UPSC

General rules, access and security

for the Greenhouse and Arabidopsis Growth Rooms

Updated 2023-12-21

If you open this document in Word - under the tab View and Navigation - you will find a full Index with tags.

Greenhouse Access (3)
GMO Safety Regulations (4)

The Security Greenhouse and the floor 2 hangar (5)
Arabidopsis growth rooms (5)
Details on Arabidopsis growth rooms for soil grown plants
Booking of growth room space
Costs for booked space
Mandatory labeling of trays
Share unused space/labels with others
Arabidopsis growth rooms for in vitro culture

Climate Chambers and Growth Cabinets (8)
Access and booking of Climate Chambers and Growth Cabinets
Costs for Climate Chambers and Cabinets

Cleaning – *How to behave as a collective member of the facility.*
Mandatory cleaning rotation for all users
Cleaning routine (staff) - Arabidopsis growth rooms

Waste handling (10)

Pest control (11)
Aphids, trips, mites, mildew etc.
Root flies

Regulations for the routine plant work (12)
Preparation of pots
Watering
Inflorescences, seed set and harvest
Arabidopsis transformation by Agrobacterium infiltration or floral dipping
Plant selection / treatment with BASTA or other hazardous substances

Appendix I - Pests: recognizing

Appendix II - Bag your plants

Appendix III - Fire safety in the greenhouse – instructions in case of a fire

Appendix IV - Checklist – greenhouse introduction

Appendix V - Checklist – weekly cleaning

Appendix VI - Floor plans, UPSC Security Facility

Appendix VII - Contacts

Greenhouse Access

This facility is designed specifically for the controlled growth of transgenic plants. As a result, there are special procedures in place to stop the release of transgenic pollen and seeds from this facility. Before you get access to this facility you must:

1. Register at https://www.upsc.se/Register
2. Read and understand the information in this document (UPSC General Rules, Access, and Security for Greenhouse and Arabidopsis Growth Rooms, incl. appendices).
3. Take part in one of the greenhouse introduction tours organized by the Arabidopsis greenhouse facility managers (Wei Wang, Siamsa Doyle, Shah Hussain, Lucija Lisica, Alexis Brun, Sara Raggi and Clément Boussardon.)
4. Confirm that you understood and will comply with the described rules and safety regulations.

The facility managers will subsequently inform one of the "GMO safety officers" at the two departments, Ove Nilsson (SLU) and Johannes Hanson (UmU), who will grant you access.

GMO Safety Regulations

- The access to security greenhouse is limited to people that have acquired the necessary information and training regarding the safety regulations and work-rules.
- When entering security greenhouse through the airlocks, you must dress in the special protective coats and protective shoe covers that are kept in the airlocks.

  To prevent the spread of GMO seeds and pollen, these protective clothes are not allowed to leave the containment of the growth facility. For the same reason, outside lab-coats or un-protected shoes are not allowed in the facility.
- Disposable hair covering must be used when handling flowering or seed setting GMO plants of the following species: spruce, pine, larch, fir, poplar, birch, and lupin.
- The protective clothes must always be buttoned.
- Shoe covers shall always be discarded when leaving the facility. To prevent the spreading of pests, the reuse of shoe covers is not allowed.
- Wash your hands after taking off the protective gear and before leaving the airlock.
- All sampling, microscopy and photography of flowering plants must be done inside the growth facility.
- All garbage must be put in special double garbage bags, each of which must be sealed safely with cable binders. Mark the outer garbage bag (125 l, dark grey) with well visible “GMO tape” before throwing it into the container on 3rd floor.

- All transgenic Arabidopsis seed must be stored in the growth facility.

- Seeds must be frozen before sowing to prevent the spread of thrips. For that reason, harvested seeds, after drying, must be kept at -70°C for at least 24h. A dedicated freezer can be found on floor 4.

- Our permit only allows the use of GMO of the specific plant species. If you have an interest in working with species that are not on the list, contact the GMO responsible persons. We can apply to expand our permit but that should be done by the GMO responsible persons.

  We are allowed to work in the facility with transgenes of:

  - Cabbage, *Brassica oleracea*
  - *Populus*, *P. tremula*, *P. tremuloides*, *P. alba*, *P. trichocarpa*, *P. maximowiczii and hybrids between these species*
  - *Eucalyptus*: *E. grandis*, *E. globulus*, *E. urophylla*, *E. dunnii and hybrids between these species*
  - Spuce, *Picea abies*
  - Fir, *A. balsamea*, *A. lasiocarpa*, *A. concolor*, *A. koreana*, *A. nordmanniana*, *A. alba and hybrids between these species*
  - Tobacco, *Nicotiana tabacum*, *N. benthamiana, N. plumbaginifolia, N. tomentosiformis*
  - Pine, *Pinus roxburghii, Pinus contorta, Pinus sylvest*
  - Hybrid Larch, *Larix* × *eurolepis* (*L. decidua* × *L. kaempferi*) also called *Larix* × *marschlinsii* (*L. kaempferi* × *L. decidua*)
  - *Arabidopsis thaliana*
  - Rapeseed, *Brassica napus*
  - Potato, *Solanum tuberosum*
  - Sugar beet, *Beta vulgaris*
  - Silver birch, *Betula pendula*
  - Downy birch, *Betula pubescens*
  - Spreading earthmoss, *Physcomitrella patens*
  - *Marchantia polymorpha*
  - Tomato, *Solanum lycopersicum*
  - Wheat, *Triticum aestivum*
  - Rice, *Oryza sativa* and *Oryza glaberrima*
  - Barley, *Hordeum vulgare*
  - Lupin, *Lupinus albus* and *Lupinus polyphyllus*

No plants can be taken out of the security greenhouse if they have been in the same room as flowering GMO plants, Arabidopsis, and poplar/hybrid aspen.

Handling of GMO seeds is not allowed outside of the security greenhouse. Therefore, all planting of transgenic seed must be done in the security greenhouse on floor 3, 4 or 5.

Arabidopsis and poplar/hybrid aspen that have been modified with respect to flowering time regulation must not to be handled or grown outside the security greenhouse from April 1 to September 30.

If you have questions relating to handling of GMO materials, please ask the GMO officers. Ove Nilsson and Johannes Hanson.

The Security Greenhouse and the floor 2 hangar

Arabidopsis growth rooms

The eight Arabidopsis growth rooms have only bookable space. Six of these rooms feature long day conditions (light period is16h) and two feature short day conditions (light period is 8h) with a day temperature of ~22°C and a night temperature of ~18°C.

Additionally, a greenhouse room (5:4) with less controlled long day settings is available for now.

To allow the completion of the life cycle of Arabidopsis, and reducing the danger of infections, the rooms open and close on a ¨rotating basis¨. This means that the time to place new plants in a LD-room is limited to 10 days and then closed for new plants until the cleaning 3 months later. Therefore, every room should contain Arabidopsis in the same stage.
Consequential, transfer of plants between rooms is restricted with certain exceptions:

- To be allowed to transfer any plants anywhere you must contact the greenhouse staff. *The plants must be pest, mould, and mildew free.*

- Plants from SD rooms can only be transferred to the LD Arabidopsis greenhouse room 4 on floor 5. This is a rule to prevent pest from spreading between rooms. Plants from a LD room can only be transferred to a SD room when the booking for the SD room is open, the first 3 months of the cycle.

- In case your plants cannot complete their cycle within 3 months (LD) you need to book a space in LD Arabidopsis greenhouse room 4 on floor 5 to complete the cycle. No permission request is necessary, just a booking on the greenhouse door and no pests in the previous room.

Plants can be removed from the rooms for sampling and other experimental reasons throughout their growth cycle – however, *once plants have begun to flower, or have been growing in the same room as flowering plants, they cannot be taken out of the contained facility.*

Details on Arabidopsis growth rooms for soil grown plants

LD (long day, 16h light) rooms:

- Six rooms, placed on floor 4.
- Room 1-3 + 8: 06.00-22.00, Room 5: 05:30-21:30, Room 7: 05:45-21:45
- The growth cycle in LD rooms is 3 months. The rooms are cleaned, and heat decontaminated between cycles.
- The booking is open for 22 days, 12 days before the room is reopened for new plants, and 10 days after, this is when you place your trays.

SD (short day, 8h light) rooms:

- Room 9 + 6: 08.00-16.00, placed on floor 3 and floor 4
- The growth cycle in SD rooms is 6 months. The rooms are cleaned, and heat decontaminated between cycles.
- The booking starts 12 days before the room is opened.
- The booking timeframe is 3 months, and you can place your trays during that time.

LD (long day, 16h light) Greenhouse room 4:

- One room, placed on floor 5.
- The growth cycle in greenhouse room 4 is 6 months and it is used for Arabidopsis.
- Make your booking on the booking list placed on the door.
- Booking and placing trays is continuously possible if they are pest, mildew, and mold free!
- This room will be cleaned and steamed every 6 months.

This is a greenhouse room, and it is not possible to control the settings to the same extent as in the LD rooms on floor 4.

Please note the cleaning date before you place your booking.

Booking of Arabidopsis growth room space

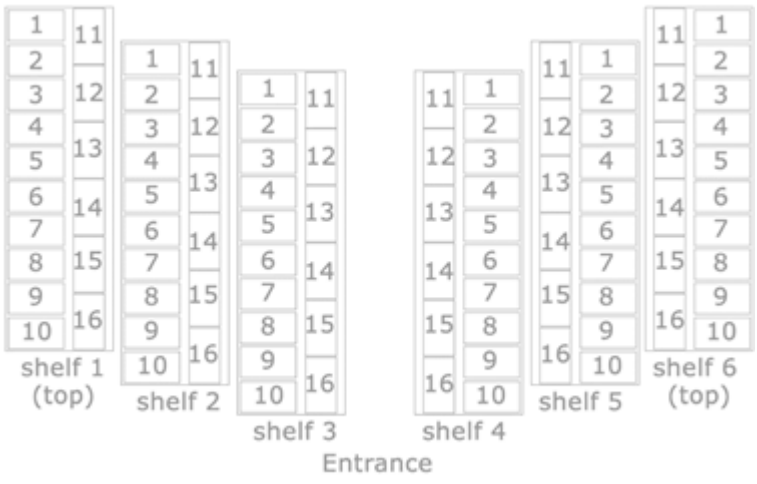
If you had the greenhouse Introduction and are registered (https://www.upsc.se/Register) you can book growth room space at: https://growthrooms.upsc.se. SLU users must log in with the "Sign in with Microsoft" function.

- When a room is available for bookings it will be announced by mail to the "UPSC all" mailing list.

- You are limited to book up to four trays per room.

If you need more space and want to book more than four trays, please contact odlingsanlaggningen@slu.se, simon.birve@slu.se or jan.karlsson@umu.se

Please don't book more space than you have need for.



- You can place your trays in a room for up to 10 days when it is open for new plants again, after cleaning. During this time the sign on the door is white.

- If you are not able to place your trays within that time, you are not allowed to place them at all. In that case, book a place in another room (they open within two weeks usually). Respect the red sign on the door, it indicates that the room is closed for new plants.

After the bookings close

- You can´t book or delete bookings.
- *Your PI will be charged for the booked space, even if you don´t use it.*
- Bookings after the official period for booking has expired may in certain cases be made, but it is an exception.

You can see your booked positions when logged in to the Growth Rooms application or on the touchscreen within the facility on floor 4.

Costs for booked space

Charges for these growth rooms are based on a flat fee per tray/growth cycle. The rooms have space for 16 trays per shelf on 6 shelves per room. Charges have been set to:

Long day rooms: 200: - /tray
Short day rooms: 300: - /tray
Arabidopsis greenhouse room, floor 5: 200: - / tray

Mandatory labeling of trays

Label your trays with a printed label. When you book the greenhouse space, you will be enabled to print labels using the printer in the floor 4 airlock.

Following information will be displayed on the label:

- Room number.
- Username.
- Group (PI)
- Tray date - the date you print your labels (and prepare your trays).
- Sowing date - fill in the date on the label by hand.
- In Vitro - fill in the yes or no box (this way we know why plants might be bigger than they should be).
- The QR code is containing information of the users' e-mail address.

Place the label visibly on *all* your trays. The greenhouse team will check if you have accurate labels when the room is closed for new plants.

Print labels for all your booked trays at the same time, your name will be invisible on the print list after printing once. However, if you need more labels for any reason, contact simon.birve@slu.se. If you have problems with the printing, please contact genfys-support@slu.se. *Trays without accurate labels will be warned and then disposed.*

Share your unused space / labels with other growers
Because of the shortage of space in the facility, you can give away your booked, unused space/labels to someone else who needs it. You will find a board in the airlock on floor 4, where you can leave and pick up labels. Write your name by hand on the label you have been given.

The new user needs to be aware that the experiment can't last longer than the given growth cycle.

Climate chambers and growth cabinets

Within UPSC and the security facility, several walk-in climate chambers and growth cabinets are available for conducting studies in a controlled environment. They can be set to a wide range of temperature and irradiance conditions to suit individual experimental requirements.
Most of the growth cabinets are placed in the hangar on floor 2 (there are space for forty cabinets), and six can be found on floor 3. Eight walk-in climate chambers are located on floor 3.

Access and booking of climate chambers and growth cabinets

Search the webpage for available Climate chambers and Growth Cabinets.
With the current pressure on this facility, it is advisable to plan well in advance of 3 months.
To use the controlled environment facility, you must fill *every box* in the Request form, where you state:

- what type of chamber you require
- the specific conditions
- and the duration of the planned experiment. State both **start** and **stop** date.

The stop date is crucial for future bookings and planning. Please respect this for everyone's benefit.

Inform your group leader before you submit your application, then submit the form to Jan Karlsson. Any PI can have maximum 3 chambers booked simultaneously. If there is a need of more, please contact the Growth Facility Management Group.

It is your responsibility to clean up after an experiment. There are no other cleaning routines for growth cabinets. You will be charged for the cabinet until it's done. Seeds and dirty dishes must be taken care of.
Please report pests to the greenhouse staff, a steaming or heating can be necessary before next experiment.

Costs for climate chambers and cabinets

Climate chambers
130: - per day

Please Note: The full cost is charged regardless of how many plants you have.
If there is more than one user, the costs are shared.

Growth cabinets
85: - per day

Cold room:
5: - per m^2 per day

Arabidopsis growth rooms for in vitro culture

Room 10 on floor 3 is only available for in vitro culture or cell suspension.
The setting is LD, 16h light with the timing: 07:00-23:00. Temperature (day/night) 22°C/18°C.

- Label your plates and flasks with your name and group.

  Plates and flasks without a clear owner label will be removed.

- Before you put your plates into the room, please make sure the bench paper and plastic racks are clean. If they are contaminated, please change the papers, and clean the racks. This will reduce the risk of contamination.

- After use, please change any contaminated papers and clean any contaminated racks.

- The settings of the shakers for cell culture should not be changed. If you want to use a shaker, please ask the person using it before you put flasks on it.

- The in vitro room inspection is part of the weekly cleaning list. People responsible for the greenhouse cleaning should check if there are dirty bench papers that need to be changed or plastic racks that need cleaning (if there are no plates on them).

Deep cleaning

- The greenhouse staff will do a deep cleaning of the in vitro room in December every year. The exact day will be announced with a UPSC-all mail, and a note on the door in good time.

  The room must be empty on cleaning day, flasks and plates must be removed from the room. It is your responsibility to throw them away or find a spot for them during the day.

  Plan your experiments accordingly.

Cleaning

How to behave as a collective member of the facility

You are responsible to clean up after yourself.

Once you have finished preparing pots, sowing, or collecting seeds, sampling etc., always put the cleaned common tools back at their place and clean the bench, floor, hoods, the binoculars, or any other common material you have been using.

Before washing the trays, make sure to remove any remaining soil, plant, and plastic to prevent clogging of the sinks. Wash the trays with warm water and soap after harvesting the plants, immediately and thoroughly.

Mandatory cleaning rotation for all users

The users of the growth facility are scheduled in a mandatory weekly cleaning rotation, where 3-4 greenhouse users are assigned to clean the common spaces each Friday.
The new facility on floor 2 is included from now on.

The list of duties will be visible when entering the facilities on floor 4, and floor 2.
The duties will also be sent out once by e-mail/semester.

If you can’t take part in the cleaning on the assigned date, you need to find a replacement. Failure to fulfil your cleaning duty can lead to removal of access to the facility.

Cleaning routines - Arabidopsis growth rooms

All the growth rooms listed are cleaned by the greenhouse team. When it's time to clean a room, it will be closed for about a week to be properly steamed or heated. This is done to eliminate any possible pest or disease.

Please keep your growing environment tidy, no other professional cleaning will be done during the growth cycle.

Cleaning date

- It is announced on the door 3 weeks before cleaning.
- When the booking for a room opens you will receive a UPSC-all mail, the cleaning date is announced there, and in the following two reminders that are sent out.
- You can always see the cleaning date in the booking system, where and when you place your booking.

Please note the date***, it is your responsibility to collect or harvest your plants, discard them, and clean your trays before the announced cleaning date.***

Rrepeated misbehaviour will lead to sanctions, and you will need to attend the introduction again and your plants will be thrown away without further notice.

To make sure your plants are dry and ready to harvest when the growth cycle is over, stop watering them three weeks before the cleaning date.

Waste handling

Glass and wooden sticks should be discarded in the specified cardboard box.
Other waste, like Petri dishes, seeds, dry or green plants, soil, pots etc. should be thrown in the black or red bins. Each waste bin contains a black plastic garbage bag (70 L). Please keep the bin closed if possible.

Full waste bin – instructions for all users

- Seal the bag with a cable binder and bring it to the garbage room on floor 3.
- Transfer the garbage bag into a bigger bag (125 L).
- When the bigger bag is full, seal the bag with a cable binder and label it with GMO tape. Only a shorter piece of tape is necessary.

These bags will be discarded in the specific GMO container behind the hatch in the garbage room. This is everyone’s responsibility and necessary to avoid pests.

When discarding infected plant material*, you need to immediately seal the bags and bring them to the garbage room on floor 3!*

Pest control

Aphids, trips, mites, mildew etc

Regularly check your plants for pests. In case pests occur, quick action is most important.

Remember that most pests travel through the air and on you. We rely on your alertness regarding pests on your own plants, but also on your colleague's plants. Read Appendix I – Pests: recognizing, to discover the most common pests.

In case you notice any signs of aphids, thrips, mites, mildew, or any other kind of disease inform the greenhouse team at odlingsanlaggningen@slu.se as soon as possible. They will treat the plants accordingly. There will be a note on the door if the room has been treated with pesticides.

Prevent pests from spreading

- Always change your lab coat and protective shoe covers after entering an infected room.
- If you have plants in more than one room, enter the infected room last.
- If you have been touching infected plants, change your lab coat and your gloves before you handle healthy plants.
- Never bring plants out of an infected room.
- Always discard plant material from an infected room in sealed bags which you immediately dispose in the container on floor 3 (even if you don't see infection on these plants, there is a big chance that they are already infected).

Wash the water can you used for watering plants.

The greenhouse staff works preemptively against pests with pest controls twice a week, sticky mats, and biological treatment every second week.

Root flies

Their larvae feed on plant roots, lower rosette leaves and fungi and algae in the soil. The more humid the soil is, the more fungi and algae produce, which leads to more root flies.

Potential sources for root fly's reproduction and how to prevent them

- exposed soil - always use soil covers.
- standing water in water cans - empty water cans when you're done.
- soaked soil - do not water excessively, root flies like it wet.
- open lids on soil boxes - always close the lids.
- pots with soil left behind - never let your pots with soil and plants stand around.

If you use protective soil covers when sowing/transplanting, you only need to water with nematodes once. In case you *do not* use them, *repeat the nematode treatment every week.*

Pest risk assessment protocol

If working with pathogens, you first need to send an application to the head of departments

to assess the risk. It should include how to avoid spreading, if it´s endemic or not, life cycle, host plants and reference persons for consulting.

No general rule will be set about risk assessment with pathogens, head of departments will evaluate every case separately.

Regulations for the routine plant work

Preparation of pots

Soil and vermiculite

You must prepare your own pots / trays with an appropriate mixture of 3/4 soil and 1/4 vermiculite. Stocks of soil and vermiculite are stored on floor 3.

Nematodes

To limit proliferation of root flies you must *always* treat all your pots / trays with a solution of nematodes (Nemablom). Apply before sowing or transferring seedlings to soil. The nematodes eat root fly larvae and are also effective against thrips and nymphs and thereby reduce damage on your plants.

- Nemablom bags and dispenser bottles are stored in the marked fridge.
- Use one bag of Nemablom per liter water (= half a bag per dispenser bottle).
- Shake well, to mix the nematodes with the water. Apply to the top of the soil before you sow seeds or transfer seedlings.

One dispenser bottle can be used for approximately 2-3 trays. The nematodes, when mixed, do not survive for long. Use the solution at once and throw away any leftovers.

Use soil covers

Everyone who is working with the 65 x 65 mm pots (the most used pots), should use soil covers. They prevent root flies from depositing eggs in the soil. If you use protective soil covers, you only need to water with nematodes once.

If you choose not to use soil covers, you must treat your pots with a Nemablom solution every week.

Watering

Watering plants growing in growth rooms and cabinets is your responsibility.

Avoid too much water

- Arabidopsis does not like too much humidity and root flies proliferate in standing water and soaked soil. Keep the top layer dry when the plants have passed the seedling stage.

  It is better to water regularly with smaller amounts than to put a lot of water once a week.

Seed and pest spreading

- To avoid seed and pest spreading, always start watering in the rooms with the youngest plants and end with the rooms with the oldest plants when taking care of your trays in the greenhouse.

Wash the watering can before you use it, and between rooms.

Inflorescences, seed set and harvest

- Inflorescences of flowering plants must be staked.
- If sufficient siliques are formed, it is advised to bag the plants for seed harvest. (See Appendix ll).
- Stop watering plants at the latest 3 weeks before the room closes to ensure you can harvest the seeds.
- Harvested seeds must be frozen at -70°C for at least 24h before use.
- To ensure seed germination dry the seeds for 1 week in paper bags. After drying, transfer the dry seeds to Eppis/cryotubes and freeze the seeds at -70°C for >24h. After freezing let the seeds thaw at room temperature. The germination efficiency should be completely restored after 1 week of resting.

Unattended flowering / drying plants will be disposed of and reoccurring failure to follow these rules can result in removal of your access to the facility.

Arabidopsis transformation by Agrobacterium infiltration or floral dipping

- Avoid the contamination of the workspace with Agrobacteria.
- Wipe the surface after finishing with 70% EtOH.
- Treat the bacterial waste with Iodine solution (overnight) and discard the treated solution into the greenhouse sink (the dipping/infiltration solution contains pollen).

Plant selection / treatment with BASTA or other hazardous substances

Plant selection should preferably be done via plate selection. However, if you select plants by spraying e.g, BASTA, you must transfer your trays (with covers) into a fume hood **outside** of the security greenhouse and treat your plants there.

At The Department of Forest Genetics and Plant Physiology there is a special fume hood on floor 6 (B6.18.51) allowed for Basta spraying. The Department of Plant Physiology allows use of any fume hood for basta spraying.

Make sure you don't contaminate anything placed in the fume hood and decontaminate all surfaces afterwards. It is mandatory to inform yourself about the used Selective agents before you use them:

Glufosinate-ammonium *(= BASTA or DL-Phosphinotricin) may damage fertility, is suspected of damaging unborn children, harmful if swallowed, inhaled or if in contact with skin, and can also cause damage to organs through prolonged or repeated exposure.* ***Kanamycin*** *(may damage fertility or the unborn child) and Chloramphenicol (may cause cancer) are also chemicals that need to be treated very carefully.* You need to work with them in such a way that no human is exposed. The same is true for any other hazardous chemical you may use on your plants!

Appendix I – Pests: recognizing

Root flies

Root flies, or Fungus gnats (Sciaridae) need to be prevented.
The visible adult fly can spread diseases but does not damage the plant.
It the *larvae* that makes the damage. They feed on the roots of the plants, the lower rosettes of the leaves, fungi, and algae. They are *especially dangerous to seedlings and cuttings.*

The adult is very small, 3-4 mm, black with long legs and antennas. The wings are transparent with an y-shaped pattern on them.

Rosette leaves eaten by root flies.

The larvae have a black head with a white body. They hide in the soil and love it humid.

How to stop and prevent root flies

Use a solution of Nemablom and put a soil cover on. If you do not use soil covers, treat with nematodes once a week.

Do not overwater your plants!

Soil covers prevents
root flies to lay eggs in the soil.

ZERO TOLERANCE SPIECES

Aphids

- Aphis multiply extremely fast, 1 aphid will become 1000 in 4 weeks.
- They spread mostly via other infected plants but also through the air (they can have wings)
- They leave behind honeydew excretions that attract fungi and they transfer plant viruses.
- Favourite food: phloem (particularly inflorescence stems, but also leaves)

SA and JA induction
Large infestations are lethal to your plants

Thrips

- Cell-content feeder
- Favourite food: pollen
  (but also epidermal cells)
- Mostly in flowers and on leaves
- Silver damage and virus transmission

JA and ET induction
Transfer plant viruses
Silver scars

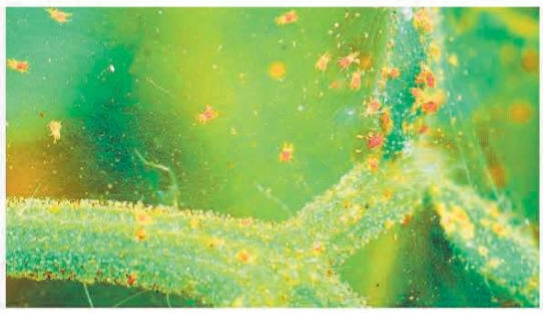
Mildew

- Favourite place: dense, humid plants
- Spores travel through the air

JA and ET induction Lesions

Spider mites

- Cell content feeders
- Spots on leaves, web-like structures



How to prevent spreading of pests

- Always change your lab coat and protective shoe covers after entering an infected room.
- If you have plants in more than one room, enter the infected room last.
- If you have been touching infected plants, change your lab coat and your gloves before you handle healthy plants.
- Never bring plants out of an infected room.
- Always discard plant material from an infected room in sealed bags which you immediately dispose in the container on floor 3 (even if you don't see infection on these plants, there is a big chance that they are already infected).

Wash the water can you used for watering plants.

Alert odlingsanlaggningen@slu.se if you discover, or suspect pests.
The greenhouse team works preemptively against pests with pest controls twice a week, sticky mats, and biological treatment every second week.

Appendix II - Bag your plants

Bag your plants to prevent seed spreading /loss and cross-contamination.

PAPER
- “Mature plants” – with siliques
- The siliques will ripen
- but flowers do not produce new ones

The inflorescence is shoved into the paper bag.
Use a stapler to attach the bag.
Do not let the bag touch the soil.

PLASTIC
-” Younger plants” – still with flowers
- Flowers do continue to develop into siliques

The plastic bag is put on over the plant and stick.
Use the stake binding tape to close the bag.

Appendix III - Fire safety in the greenhouse – instructions in case of a fire

Fire outside the greenhouse:

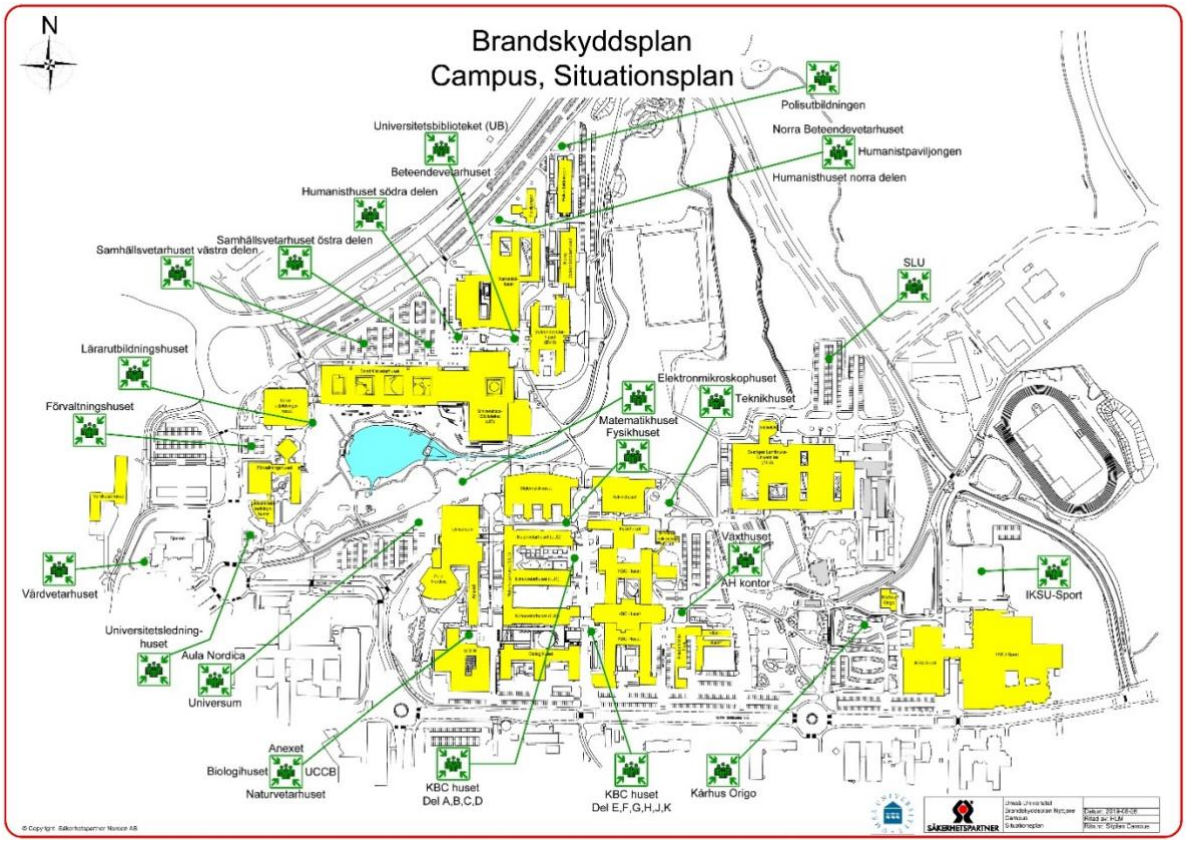
Wait for help! The greenhouse is a so-called ‘fire cell’ designed to withstand fire until the fire brigade arrives.

Fire inside the greenhouse:

- Assist people in danger to a safe place.
- Press the alarm button and call 112.
- Try to enclose the fire if possible (close doors etc.)
- Warn others in danger.
- Extinguish fire if possible.
- Help yourself and your colleagues to make your way to the assembly area outside the building.

In case you need to get out the main doors during a power outage. Break the cover over the lock and open, all doors on every floor work the same way.

The closest assembly area is *KBC-huset* or *Växthuset.*



Appendix IV – Checklist – greenhouse introduction

Entrance 4th floor:
- Labels
- Coats: blue, and red for the laminar flow hood
- Shoe covers
- Booking for clean benches
- Cleaning rotation

4th floor:
If you have plants in more than one room, enter the one with the youngest plants first and the oldest last.

Never move plants from a room to another

If you see pests contact the greenhouse team

- In case of pests: Do not enter other rooms, trash cover shoes, change your coat.

It is not allowed to bring flowering plants outside the Growth facility

- Use reusable soil covers for pots (to wash afterwards and dry) or Nemablom (nematodes) once a week stops root flies.
- overwatering = root flies
- Rooms are open for 10 days after cleaning for soil growing plants (from in vitro exceptions are possible).
- Clean after yourself.
- Empty full bins and replace bag.

-70°C for treating seeds o/n (mandatory)

- Seeds on the 4th floor are in boxes and are those currently in use. Long storage is on the 3rd floor and boxes belong to each PI.
- Fridges are for storage of plates or seeds for a limited time.
- For scanners, camera and stereo microscope ask info when needed.

5th floor:
Book space to the Arabidopsis greenhouse room 4 on the list of the door. Plants must be pest, mildew, and mold free, contact the greenhouse team for approval. All trays must be labeled and placed easy to read.

3rd floor:
Incubators, cabinets, that can be booked and whose settings can be changed by the group (ask Jan Karlsson). There are also bookable growth chambers.

In vitro room 10: Always mark the plates with name, data, and PI. The room is regularly cleaned by the users. Contact Wei Wang if you have questions. Deep cleaning in December every year by the greenhouse team, plan your experiment accordingly.

- PIs boxes for long term seeds storage
- Soil: it is the red one for Arabidopsis
- Double bag and GMO-tape before trashing the garbage.

2nd floor: Labs and a hangar for cabinets. The cabinets are in a contained area which is the prerequisite for working with flowering transgenic plants. This area comprises also space for planting and lab work, a photo station and two stereomicroscopes so that the plants growing in the new facility can be examined in more detail.

Appendix V – Checklist – weekly cleaning

Cleaning instructions - common area floor 2, 3 and 4

Clean the tables.
Empty trash cans according to rules. *
Take care of trays – wash dirty ones, put away clean ones.

Clean benches - Laminar flow hoods: (floor 4)
Bench nr 1 and 3

- Remove the worksurface panels.
- Clean the space underneath (with ethanol 70%).
- Clean the walls and glass screen (with ethanol 70%).
- Clean the surface panels (with ethanol 70%).
- Reassemble everything.

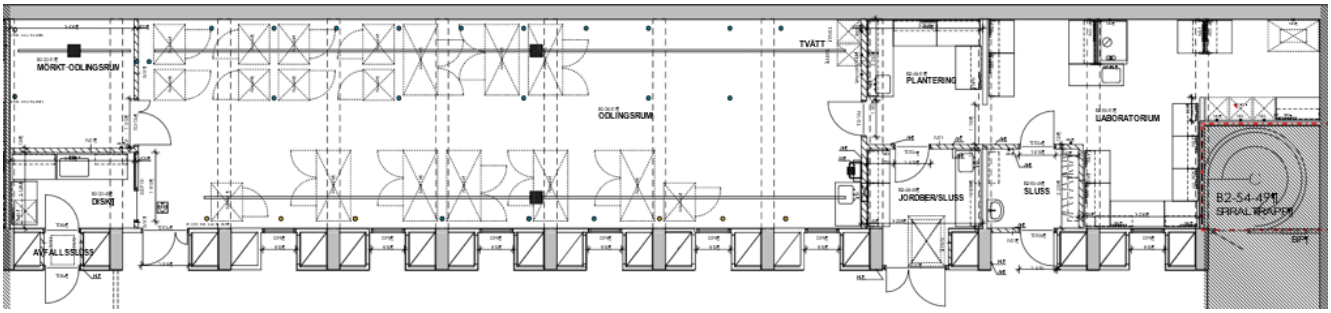
Bench nr 2
Wipe the surface and sides with ethanol 70% (as it does not circulate the air and has no removable panels).

In vitro room
Check if there are problems like mouldy plates or paper.

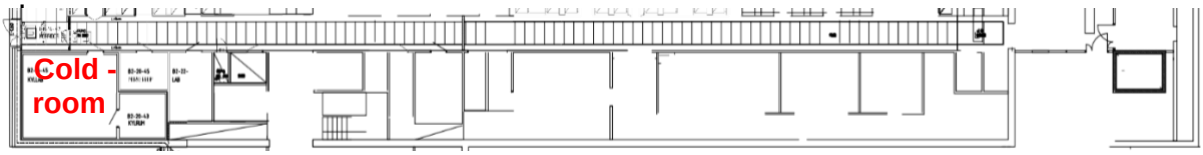
*Reusable material can only be recycled and reused within the facility, never taken outside of the containment. Throw it away the same way as trash, double bags, and GMO tape.

Appendix VI – Floor plans, UPSC Security Facility

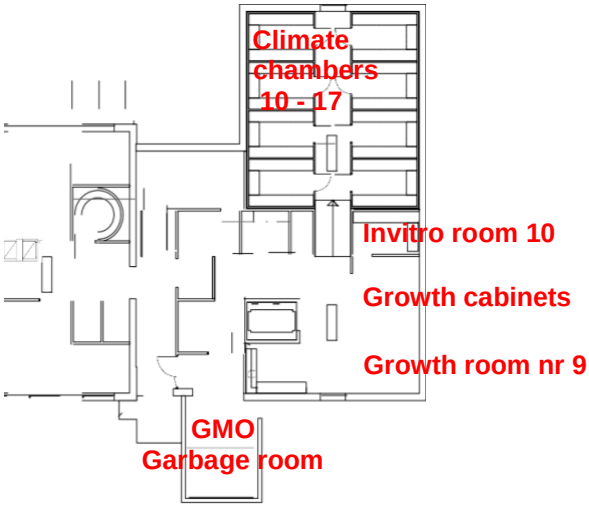
Floor 2
The new contained hangar with growth cabinets. GMO plants are allowed here, as in the main growth facility.



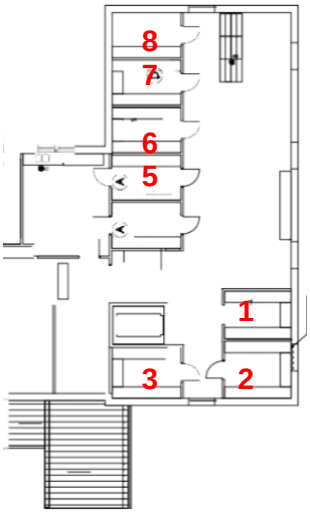
In the cold room are only nonflowering plants allowed.



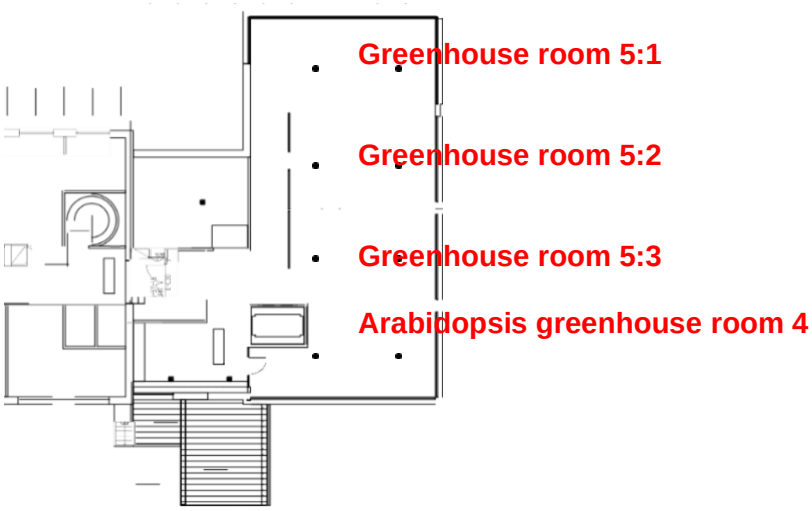
Floor 3
Climate chambers, growth cabinets, Arabidopsis in-vitro room 10, growth room nr 9 and GMO garbage room.



Floor 4
Arabidopsis growth rooms 1-8



Floor 5
Greenhouse rooms, growth cabinets



Appendix VII – Contacts

Greenhouse team:
Ann Sehlstedt, Åsa Gavelin, Anna Forsgren, Jed Biolcati-Brennan
0730 - 88 51 48
odlingsanlaggningen@slu.se

Facility management team:
Wei Wang, Siamsa Doyle, Shah Hussain, Lucija Lisica, Alexis Brun, Sara Raggi and Clément Boussardon.

IT related issues (booking etc):
Simon Birve
simon.birve@slu.se

Technical issues:
Jan Karlsson
jan.karlsson@umu.se

Akademiska Hus:
Tomas Björk 070-6953119
tomas.bjork@akademiskahus.se