

Information and guidelines for users of the Biotron

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General

NB! This document must be read before using the Biotron.

The document will be developed with time. The most recent version of the document is available at the Biotron webpage. The content of the document is approved by the Biotron Steering committee. Suggestions for the content of this document should be communicated to the Head of Odlingsetheten, see "Contact".

The Biotron is a research facility at SLU, Faculty of Landscape Architecture, Horticulture and Crop production Science (LTV), and is managed by Alnarp Park and Gardens ("Odlingsetheten"). The Biotron consists of a number of climate chambers with controlled climate, designated mainly for plant cultivation. The facility offers possibilities for constant, accurate and reproducible results, as well as new methods for control of plants and environmental factors. This is performed with high accuracy with respect to climate factors, to offer the best conditions for controlled experiments.

The facility is primarily intended for use by researchers at SLU Alnarp, in their research and teaching. Space permitting, researchers from the other SLU campuses are welcome, this applies also for other universities and companies. Universities are prioritized before private companies. The main focus for the Biotron is plant sciences, but also other experiments, with high demand for controlled climate, can be eligible. Such operations may, however, not compromise other experiments in the facility.

There are different types of chambers in the facility:

- Climate chambers (KK), chambers with artificial lighting and high accuracy with respect to control of temperature, humidity, CO₂ concentration and light.
- Growth chambers (OK), chambers with artificial lighting and somewhat lower accuracy in the control of temperature. No control of humidity or CO₂ concentration.
- Daylight chamber (DK), chambers with natural light (daylight), with high accuracy regarding control of temperature, humidity, and CO₂ concentration, and with possibilities for supplementary light.
- Greenhouse chambers (VK), chambers with natural light and lower accuracy with respect to control of temperature and humidity. Possibilities for supplementary light. Comparable with a conventional greenhouse.

It is important that the information and guidelines below are followed, in order to ensure the quality of the operations. Neglect is not accepted.

Regarding experiments with Genetically Modified Organisms (GMO), information is starting on page 14 in this document. These guidelines were included in the application for GMO experiments to the Swedish Board of Agriculture.

From page 16, frequently asked questions are listed.

On the last page of this document, a table with specifications for the different chambers is available.

Contact

The email address biotronen.alnarp@slu.se should be used for everything that has to do with activities in the Biotron.

There are three staff members who are directly connected to the Biotron:

Ann Dahl: 040-41 52 05, ann.dahl@slu.se

Ramesh Vetukuri: 073-926 23 63, ramesh.vetukuri@slu.se

Alexandra Nikolic, 040-41 50 77, alexandra.nikolic@slu.se

Ann Dahl is our research engineer and is responsible for maintaining the function of the operating technology in the Biotron. She is to be contacted for questions regarding access, bookings and climate programming in KK, DK, OK and VK.

Alexandra Nikolic is in charge of pest management and also acts as operational support in the Biotron.

Ramesh Vetukuri is our development leader and in charge for optimizing the function and operation in the Biotron. He is to be contacted for guidance regarding climate settings.

Head of the Alnarp Park and gardens is Alexandra Nikolic, 040-41 50 77, alexandra.nikolic@slu.se
Safety representative in the Biotron is Ann Dahl, 040-41 52 05, ann.dahl@slu.se

Security

In case of fire, Save, Alert, Extinguish. The evacuation alarm can be activated manually via buttons and is connected directly to the fire brigade. Smaller fires can be put out by a hand held fire extinguisher, or a fire blanket. If a fire is too big to be put out by a single person, immediately evacuate the building and alert the fire brigade, telephone 112. Do not go through smoke-filled spaces. Red flashing light and an acoustic signal indicates evacuation alarm. Plan for evacuation is located in the main entrance.

There is an alarm in the WC. This alarm gives an optic and acoustic signal outside the WC, Note, this alarm is not connected to Public service answering point (PSAP).

In climate chambers KK5, KK6 and KK7, constructed for temperatures below freezing point, there is an alarm which can be activated if trapped in the chamber. By pressing the button, a red light goes on outside the chamber and a signal is sent to PSAP.

If the carbon dioxide alarm (blue flashing light) goes on, immediately evacuate the building. If you suspect too high CO₂ concentration in the building, contact the Biotron staff. If the CO₂ concentration reaches critical levels, an alarm is sent to PSAP.

All kinds of accidents and incidents in the Biotron must be reported according to SLU rules. The

Biotron staff as well as the responsible for security and the safety representative must be notified. See "Contact".

Any errors or deficiencies with your chamber or the Biotron in general must be reported to Ann Dahl.

Carbon dioxide

If an experiment with CO₂ is planned, the Biotron staff must be notified at least 2 weeks before start. See "Contact". It should also be specified in the booking sheet. The Biotron provides CO₂ flasks and also installs and operates them.

Special gases

Compressed gases other than CO₂ cannot be used in the Biotron without informing the Biotron staff. Applicable safety regulations must be followed.

Radioactivity

Radioactive material cannot be brought in to the Biotron without informing the Biotron staff. Security regulations must be followed. No activities harmful to persons or experiments are allowed.

Chemicals

If you plan to use any chemicals during your experiments in the Biotron, it is mandatory that you inform us in advance. You must provide a risk assessment for those chemicals, detailing their use in indoor facilities. Also you must send us a safety data sheet. Chemical use will only be permitted after receiving approval from us. See also Treatment of pests.

Booking of chamber

NB – If the planned experiment includes soil from outside, pathogens, insects, etc., a written risk assessment must be performed. The risk assessment should be done by the user and delivered to the Biotron staff for approval by the Biotron steering committee. The risk assessment must be approved before the booking is completed.

NB – Users with absolute need for a chamber with LED-lighting are prioritized in these chambers. Users in LED-chambers might be moved to a non-LED chamber if another user is prioritized for the LED-chamber.

Chambers are booked by personal contact with the Biotron staff. The person responsible for payment of the rent should be listed as user, but the booking might be done by other person. Bookings will not run over new-year, due to possible changes in the user fee. The booking contract needs to be signed before the chamber is started.

Booking a chamber needs to be done **at least two weeks before the experiment is schedule to start**. This is because the chambers needs to be tested by the staff to ensure a stable function. If the booking is supplied later than two weeks before start, the Biotron staff can't guarantee a safe and stable operation of the chamber.

If possible, book the chamber for the whole experiment period already from the start. This will facilitate the planning of the activities in the Biotron.

If the booking period needs to be prolonged, a new booking is done. The chamber will not be booked for other user without asking the current user if they need prolongation. NB that request for prolongation of chamber must be send to the Biotron staff **latest two weeks before current ending date.**

Upon booking, please supply the following information:

- Name, who will pay
- Company/department/unit
- Telephone number
- Mobile telephone number
- Email address
- Postal address
- Billing address
- Reference number for invoice handling
- Marking (name)
- Booking period
- Plant type
- GMO / non GMO
- Known pests/pathogens and a control strategy for this
- Cleaning routines if you are working with pathogens or chemicals

Contact details for users will be written on the climate form displayed at the chamber.

Admission to chamber

The user can start using the chamber from the first day of the booking period. Remember to include time for your own preparations in your booking.

Costs

The cost for renting a chamber in the Biotron might change from year to year. Changes in the cost will be implemented from January 1st. The fee is charged per day, and there is a minimum total cost. For details about cost and payment, contact the Biotron staff. In case of early cancellation, 5 days from the day of cancellation will be charged.

Charging

Charging of rent is performed quarterly. If you wish other arrangements, contact the Biotron staff.

Other costs

If the user causes problems that activate emergency personnel, the user will have to pay for the expenses. This applies also if the alarm is caused by equipment used in the experiment. Alarm will always alert emergency personnel, there is no way to revoke the alarm.

If a user causes damage to the facilities, the user will be held financially responsible.

Contact persons

There should be at least two contact persons for a chamber. These two persons must be reachable during the whole experiment. If there is a technical problem with the chamber, the contact person will have to move the experiment to another chamber. The emergency personnel will not move any material. If the communication does not work, the experiment might be lost.

Climate settings

Changes in climate settings can only be done during working days between 8 am and 12 pm. This is because any changes might trigger the alarm and needs to be handled by the staff.

Climate changes must be communicated to the staff at least 1 week before the change is to take place.

No changes in settings will be done when the Biotron staff is not available, due to for example vacation.

Only the Biotron staff is allowed to make changes to the climate settings. Only climates within the specifications of the chamber can be used. Eventual deficiencies in capacity due to technical reasons might occur. The climate form needs to be signed by the user, or other, by the user, appointed person.

Climate program should be reported to the Biotron well ahead of the start of the experiment, to enable testing of the chamber with the desired climate. This will be done at least 2 weeks before it will start.

There are different types of chambers in the facility, with different possibilities for climate control. See table 1 regarding which parameters that needs to be stated upon booking.

Table 1: Information needed when booking different types of chambers

Parameter	KK	OK	DK	VK
Day length	X	X	X	X
Start of day, HH:MM	X	X	X	X
Temperature day, °C	X	X	X	X
Temperature night, °C	X	X	X	X
Relative humidity day, %	X	-	X	X
Relative humidity night, %	X	-	X	X
Carbon dioxide concentration day, ppm	X	-	X	-
Carbon dioxide concentration night, ppm	X	-	X	-
Light intensity, $\mu\text{mol m}^{-2} \text{s}^{-1}$	X	X	-	-

Supplementary lighting	-	-	X	X
Name contact person 1	X	X	X	X
Mobile phone number person 1	X	X	X	X
Name contact person 2	X	X	X	X
Mobile phone number person 2	X	X	X	X
Supplementary lighting	-	-	X	X
Shading screens	-	-	-	X

Ramp time between day and night settings for temperature and humidity is as standard 1 h. Special climate programs can be used upon request.

Control of light intensity in KK and OK

The light intensity in chambers type KK and OK is controlled, so that constant light conditions are achieved. This is done by a light sensor placed in the chamber. The light sensor needs to be properly placed in order to obtain good light conditions; it might for example not be placed close to the wall and may not be shaded. The light sensor should be protected from dirt and water. If the sensor is dirty or misplaced, the lighting system will have to work unnecessarily hard.

If experiments involve comparisons between chambers, the light sensor needs to be placed in exactly the same position in all chambers included in the experiment.

Surveillance and alarms

Climate in the chambers and the status of technical installations are monitored continuously when the chamber is in use. If an error occurs, an alarm is sent out to an alarm central, which sends personnel to the Biotron. The problem is addressed, and if this is not possible, another chamber is started for transferring of the experiment. This requires that another chamber with the same specifications is available. During non-working hours, emergency personnel will come.

Note that the experiment will not be moved by the emergency personnel, but they will contact the persons specified on the climate form. It is important that these persons are available during the experiment.

Alarms caused by users

If a user is present in the facility when the alarm is activated (yellow flashlight goes on), please wait for the emergency personnel to arrive. It is not possible to revoke the alarm, emergency personnel will come.

Spare chamber

There is no chamber designated as a spare chamber, but all chambers not in use might be used for spare chamber. There is no guarantee that a spare chamber is available.

Technical problems

If you detect problem like too high temperature, lights that do not work, strange noises, etc., contact the Biotron staff ASAP. The Biotron staff will try to solve the problems as soon as they are notified.

Access and alarms

Access to the Biotron can only be obtained after contact with the Biotron staff, see “Contact persons at the Biotron”. When you have access to the Biotron, you might enter 24/7. Only persons with ongoing experiments are allowed to have access to the Biotron. You are not allowed to borrow someone’s key card, or lend your card to anyone. Lost card should be reported ASAP to SLU/Service.

Please note that it is possible to enter the waste storage without key card, but you will need the key card to go back to the Biotron from the waste storage.

Entrance to the Biotron

Entrance and exit must always be through the main entrance. You must not pass any other doors, except in a situation of evacuating the building.

Emergency levers on the doors can only be used in case of an emergency. If the lever has been used, you must immediately contact the Biotron staff, this is important.

The entrance passage is divided into two parts. The benches in the entrance marks the border between these two parts. Shoe covers must be put on before passing the border. When leaving the Biotron, the shoe covers must be removed before putting the foot down outside of the bench. You may also use own indoor shoes, if they are only used in the Biotron.

You should walk on the sticky mats when entering or leaving the Biotron. Carts taken in or out of the facility needs to run over the sticky mats.

In the entrance, there are lockers for hanging lab coats.

Visitors

You may take visitors into the Biotron, if it is a limited number of people, if it does not affect the ongoing activities. If possible, inform the Biotron staff before taking visitors to the facility. If larger groups will visit the facility, the Head of Alnarp Park and gardens must be informed. This also applies if representatives from media will visit the facility.

To reduce the risk for pest infections, visitors are not allowed if they have previously the same day visited greenhouses or other possibly infested places.

Cleaning

In each zone of the Biotron there is a cabinet with cleaning equipment. Put the equipment back after use.

Note! This equipment might not be taken out of the zone! If own cleaning equipment is taken into the zone, it may not be taken out again.

Everyone should clean the workspace after usage. Benches, sinks and floor should be clean. The working areas should always be nice and clean.

Waste

No waste, other than GMO waste, can be put in the waste storage.

Users from private companies or universities other than SLU will have to take care of their own waste, or make an agreement with a department at SLU regarding this.

All GMO waste should be carefully handled. All waste should be collected in special waste bins (carton with plastic bag inside). Waste bins must be placed so that no other activities are affected (in the own chamber). The waste bin must be sealed all the time, to prevent pests from spreading.

The waste bin is put in the waste storage for destruction. Before the bin is taken out of the zone, please ensure that it is properly sealed. It is important that it is sealed tightly.

The following applies to handling of waste in the waste storage:

- Seal the inner bag with tape and then seal the bin
- Each bin must be marked with the name of the person paying for destruction
- A sticker with the text "UN 3245" must be put on each bin, see figure 1. The sticker should be put on the lower left side of the bin.
- Put a mark on the list in the waste storage.
- Place the bin so that the label is visible.

There are different sizes of waste bins. Put them on a pallet as follows (maximum two boxes in height):

- 60 liter – 8 bins in the bottom
- 60 liters – 4 bins on top

This might change.



Figure 1. Label marked with "UN 3245".

Alnarp Park and gardens will order transportation of the GMO waste to a destruction facility. Bins are furnished by the user.

Storage

Material should not be permanently stored in the Biotron. When the experiments are finished, all equipment should be removed from the Biotron. If the material has been used in connection with GMO crops, it should be carefully cleaned, or put in a bin for GMO waste and placed in the waste storage room.

Preparation rooms

Preparation rooms should not be used as a laboratory. It can be used for preparations if there is no risk to health or environment. Chemicals must not be disposed in the sink. Chemicals may not be stored in the preparation room.

The preparation room is not storage. Only things directly connected with ongoing experiments should be stored here.

Cabinets and drawers are to be used by the users. Clearly mark with your name. Clean and remove excess material regularly.

Before leaving the room, clean benches, sinks and floor. Cleaning equipment is available in the cleaning cabinet ("Städ") in the zone.

Use of the chamber

Be careful not to damage the chamber, for example the walls (important due to light reflection). Sticky traps must not come in contact with walls, floors, or ceiling.

The user is responsible that the chamber is always clean. No plant residues should lie on the floor or on the carts. If urged by the Biotron staff, a user should clean the chamber.

If pots have drainage holes for water, they need to be placed on a saucer or on plastic sheets to prevent excess water from reaching the floor. If plastic sheet is placed on the grey carts, it needs to be at least 600x600 mm.

Water carefully so that no water or soil splashes on floor or walls. The walls should not be sprayed with water since this might cause mold growth.

If water is spilled outside of pots, it should be wiped up. Water spillage might cause alarm due to high humidity. The hose should be hanged properly after use.

Do not put too many carts in the chamber, and do not place them too close to the walls. Number of carts and their placement will affect the climate in the chamber. There is lower light intensity close to the walls. Note! For VK and DK, carts may not be placed so that plants can come in the way for the shading screens on the walls. Plants as well as screens can be damaged. Check regularly and move plants if necessary.

Maximum number of wagons per chamber type:

KK Chamber 16 pcs

OK chamber 14 pcs

DK Chamber 28 pcs

VK-Kammare 28 pcs

Do not leave the door open longer than necessary, as this will affect the climate and might trigger alarms.

Own notices can only be put up after informing the Biotron staff.

Users are not allowed to change any settings on control panels.

No chamber should be running without experiments going on. If you remove your material, please inform the Biotron staff.

Avoid looking directly at the light sources. You can use sunglasses (not supplied by the Biotron).

A number of ear protections are available and placed in the entrance for use in the Biotron. They should be returned to the same place when leaving the Biotron.

For Led chambers KK2, KK9 and DK4 use safety glasses

For KK2 and KK9, the following information applies: Do not look directly into the lights when they are on/lit. Use safety glasses that are adapted to protect the eyes from UV and blue LED light. The less "light leakage" the better. To reduce light leakage, it is often advisable to use a cap or similar in addition to safety glasses. Keep a distance to the lamps, at least 20 cm. If you are going to stay under the lights for a longer period of time, it is advisable to consider adapting the lighting accordingly. For example, if the light from the lamps contains a lot of blue/UV, it is advisable to consider changing to a more environmentally friendly lighting. If this is not possible, it is advisable to protect the eyes (from blue/UV/strong light), but also the skin (from UV; for example with covering clothing).

For DK4, the following information applies: Do not look directly into the lights when they are on/lit. Use safety glasses that are adapted to protect the eyes from blue LED light. The less "light leakage" the better. To reduce light leakage, it is often advisable to use a cap or similar in addition to safety glasses. It is advisable to keep a distance from the lamps. If you are going to stay under the lights for a longer period of time, it is advisable to consider adapting the lighting accordingly. For example, consider changing to a more environmentally friendly lighting.

Above information comes from the supplier of the LED lighting. The user buys safety glasses himself.

Own equipment

Before user puts own equipment into the Biotron, please contact the Biotron staff.

Users are responsible for their own equipment. The equipment must not cause damage in the facility. Equipment should be approved for use in the type of environment, be grounded and have FI-marking.

Do not put too much equipment in the chamber. If a problem occurs, it might happen that all equipment needs to be taken out of the chamber in order to fix the problem.

Handling of sewage

All waste water from the facility is collected and pasteurized before further transportation to the public sewer. All sinks have sand separators. Do not let the water run more than necessary.

Planting and handling of soil

All seeding, planting and handling of growing media must be done in the Biotron. You are not allowed to make the planting in a greenhouse and move the plants to the Biotron afterwards. All handling of soil should take place on the planting benches. Do not spill on the floor.

Floor and tables should be 100% clean when you leave!

If soil from outside is used, it needs to be filled in containers outside the facility. The containers should be externally cleaned before transported into the Biotron. The Biotron staff will advise which way to take the material into the facility.

Soil from outside, pathogens and pests

If you are bringing in soil from outside, or if you are going to perform experiments with pathogens, insects, etc., please note:

- You need to perform a risk assessment for any experiment you do with pests, pathogens or soil from outside. The user writes this assessment and it is submitted to the Biotron staff for approval. The risk assessment needs to be approved before the booking is completed.
- You need to keep a journal of all activities; where does the material come from, how is it handled inside the Biotron, how is it handled after the experiment. All activities need to be traceable.
- The user is responsible for his/her experiment, and that other experiments in the Biotron are not affected.
- The Biotron staff keeps notes about plants, pathogens and insects taken into the Biotron.

Approval of the risk assessment is done by Alnarp Park and gardens, possibly with support from the Biotron steering group.

Bringing plants in from outside

To bring plants to the Biotron from outside (for example from the research greenhouses), is generally not permitted. You will need to motivate why if you want to bring in plants from outside. Bad time planning with GMO crops is not an acceptable excuse. All material taken into the Biotron must be free from pathogens; this applies also to seeds and tubers.

Watering and management of plants

Take care of your plants. Clean out dead material. Water sparingly. All water needs to go into the pot/container. The upper part of the growing medium should be dry between irrigations, to prevent Sciariid flies. Supply sufficient nutrients. Slow-release fertilizers needs to be mixed in the soil and should not be put on top of the soil.

Avoid water splashes on the walls, as this might cause permanent damage to the construction.

Treatment of pests

Before the start of the experiment, the user should construct a pest managing strategy that states which the common pests/pathogens are for the plants and how treat it. Specific chemicals and their application plan should be described.

Try to avoid visiting greenhouses before coming to the Biotron. If you have been in a location where pests are present, it is not advisable to visit the Biotron afterwards. If this rule is followed, the risk of bringing pests into the Biotron will be reduced. If you bring in pests, you will not compromise just your own experiment, but also everyone else's.

The user is responsible for checking their material with respect to attacks by insects, fungal pathogens or other pests. Inspect your plants regularly. If you find any type of attack, immediately report to Alexandra Nikolic, see "Contact". If there is a need for treatment, the Biotron staff will discuss suitable measures with the user. The final decision on what actions to take is taken by the Biotron staff. All chemical treatment is performed by staff from Alnarp Park and gardens.

If chemical treatments have been performed in a chamber, you cannot enter for at least 12 hours. All chemical treatments are documented by the Biotron staff. A sign with information about the treatment is put up on the door to the chamber.

Biological treatments are used rather than chemical treatments, as phytotoxic effects are less likely to occur. Also, many pests have developed resistance against chemical treatments. Chemical treatments might also pose health hazards for persons working in the Biotron.

The Biotron supplies "*Swirskii*" for control of thrips, and white flies, Nematodes and *Gnatrol* for control of Sciarid flies, and yellow and blue sticky traps. *Swirskii* and sticky traps you will find on a table at the entrance, nematodes and *Gnatrol* in the fridge in the entrance. User is responsible for applying biological treatments. Note that usage of *Gnatrol* requires a license and will therefore be applied by the Biotron staff. Please contact Alexandra Nikolic if there is a need for it to be applied.

Nematodes should be supplied to the growing medium as a preventative treatment, if this does not harm the experiment. The user is responsible for this application. If there is an attack by Sciarid flies, supply more nematodes and *Gnatrol* and also put out more sticky traps. Always keep good hygiene and proper watering and fertilization.

Sticky traps should be put in the chamber, this is done by the user. They must not be placed where they might come in contact with walls or other equipment in the chamber. This is extremely important in KK, where the walls are very hard to clean. The sticky traps serve dual purposes; as a monitor for presence of insects, but also a way of reducing the population. They will need to be replaced on a regular basis. Used sticky traps should be disposed in a suitable waste bin, if they have been placed in a chamber with GMO material, they will need to be handled as GMO waste. Do not put sticky traps on benches, floors etc. If you do this, you will have to remove all glue from the surface.

Avoid taking the carts with material out of the chambers if the plants are attacked by any pathogens.

If something is missing or if you are not sure how to act, always contact the Biotron staff.

Finishing of experiments, and change of chambers

No chamber will run unless experiment is ongoing. If all material is removed from the chamber, please notify the Biotron staff.

When the experiment is finished, all plants and soil needs to be taken away. Plants and soil cannot be put in other waste bins than designated bins. If the material is regarded as GMO waste, special precautions needs to be taken. Organic materials are put in compost bins. Pots, plastic and saucers used in the experiment are taken care of by the user.

The floor in the chamber should be vacuum cleaned and wiped with a moist cloth. Not. No dirt must be left on the floors. The floor panels needs to be lifted for cleaning underneath.

Not. It's absolutely forbidden to flush out soil and plant material in the sewer!

The walls should be cleaned very carefully so that the reflecting surface is not damaged. You are not allowed to spray water on the walls.

The sink as well as the water hose should be cleaned. The hose should be properly hanged and must not lie on the floor.

The carts should be carefully cleaned, and adjusted to standard height (upper shelf 1 meter above the bottom). All other equipment should be cleaned. Any equipment borrowed from the Biotron should be returned.

Threshing room

A room designated for threshing of smaller volumes of material is located to zone 1. When the job is finished, the room should be cleaned; the room should be completely clean when you leave (use cleaning equipment located in the zone). GMO waste needs to be handled in accordance with regulations. See "Bringing plants from outside" page 12.

If you cause any damage

If you cause any damage to the facility or to equipment in the facility, immediately report this to the Biotron staff.

Service on chambers

If service needs to be performed on the chamber, the user will be assigned another chamber. You need to move your experiments yourself. It might happen that you will have to move back after the service action is completed.

Instructions to prevent spreading of GMO material

All climate chambers, threshing room and preparation rooms in the Biotron are approved for handling of GMO materials.

The greenhouse chambers, VK1-4, cannot be used for experiments with flowering GMO crops during the period 1 April-30 September.

Exceptions are given for genome edited potatoes that can be grown year-round in VK 1-4.

To be able to work with GMO material in the Biotron, you will have to have a permit including the plant you are working with. This permit is not acquired by Alnarp Park and gardens. All personnel involved in the GMO experiment should review the safety regulations, the permit to grow the current crop, and the department's regulations for GMO crops before the experiment is started. If GMO crops are to be handled in the chamber, this must be specified when booking a chamber.

Regarding these instructions, the threshing room should be regarded in the same way as the climate chambers.

Please note the following precautions:

1. Passage in or out of the facility must be through the main entrance. No other way can be used!, unless specifically advised by the Biotron staff. Only in emergencies (fire/gas alarm) you can use other exits. Note that during a fire drill you will still have to use the main entrance and not the emergency exits. Before entering the facility, shoe covers should be applied when passing the border in the entrance. Shoe covers are furnished by Alnarp Park and gardens. You should walk on the sticky mat in the entrance, and all carts taken in or out of the facility needs to be driven over the sticky mat.
2. If you keep GMO material in a chamber, you need to put up a sign on the door with information regarding the plant species and contact details to responsible person.
3. The door to the chamber should always be closed when working in the chamber.
4. Working clothes should be used when working in a GMO chamber with flowering plants. The clothes should be taken on and off in the entrance "sluss", or in the chamber.
5. If work on GMO plants is performed outside of the chamber, a warning sign needs to be put up on the door to the zone.
6. If GMO material needs to be moved outside of the zones, it should be completely enclosed to prevent spreading.
7. If there is GMO material in a chamber, all material in the chamber should be considered as GMO material and be handled as such. This applies to plant material, growing media, containers and carts.
8. Every person working in a GMO chamber is responsible that no spreading of GMO material occurs.
9. After working with GMO material, all contaminated areas such as benches, floors, lab equipment etc. should be immediately cleaned. The user is responsible for this cleaning.
10. The user is responsible for taking care of any wastes. Waste should be kept in sealed containers inside the chamber until the material is sent for destruction.
11. Material sent for destruction should be well enclosed to prevent spreading, and placed in the waste room for later shipping for destruction.
12. Any signs regarding GMO work should be taken down when the work and cleaning is finished.
13. No plant material can be taken out of the facility if there is any risk of spreading GMO material.
14. Before trolleys or other equipment are taken out of the facility, they need to be properly cleaned.
15. When leaving the zone, you should walk on the sticky mat. All trolleys should be run over the sticky mat.
16. Shoe covers should be taken of at the border in the entrance and put in designated boxes. Shoe covers are sent for destruction.

Cleaning equipment and other equipment

1. Cleaning equipment is available in the zone.
2. No cleaning equipment can be taken out of the zone.
3. If cleaning equipment needs to be taken out of the zone, it should be sent to destruction, or be completely sanitized (cleaning machinery).
4. If users introduce own equipment in the zone, points 2-3 applies also to this equipment.
5. Point 3 applies to all equipment.

In addition to the cleaning that every user is responsible for, the zones are regularly cleaned by janitors. For equipment used by janitors, the points above apply.

FAQ

Can I borrow extension cord, water pitcher, etc.?	Please, try to bring all equipment you need for you experiment. If this is not possible, the Biotron staff will of course try to help you out.
Can I keep my equipment in the Biotron or in your storage until the next time I will perform and experiment?	No
Can I transplant my plants in the preparation room in the Biotron?	Yes, you should do all handling of your plants in the Biotron.
Can I put my plants in the Biotron if it is only mildly infected?	No! All material should be healthy when brought into the Biotron.
Can I put infected plants in my own chamber?	No! All material should be healthy when brought into the Biotron.
Can I store smaller plastic pots in the Biotron?	Yes, if they are clean and if you put them in the cabinet in the zone.
Can I leave a bag of soil in the Biotron until the next time I come?	No, left-over soil should be removed. It cannot be thrown in the waste bins in the Biotron.
Can I leave and come back and clean later?	No
Can I put other waste than GMO waste in the waste room?	No! All other waste but GMO waste you will have to take care of yourself!

Where can I find blue and yellow sticky traps?	On the little table in the entrance.
Where do I find nematodes?	In the fridge in the entrance.

How much does it cost to rent a chamber?	The Biotron staff will give you answer to this question. The prize is adjusted yearly, from January 1 st .
Can I pay for less than 1 month?	You can book a chamber for a period shorter than one month. However, there is a minimum cost.
Can I get my invoice directly after finishing my experiment?	Yes.
Can I use a chamber for testing just a few days?	Normally not, but depending on purpose this can be discussed with the Biotron staff.
Can I adjust the climate settings on the panel outside the chamber?	No!
Can you measure the light intensity in the chamber weekly?	In the climate chambers KK and OK, the light intensity is automatically adjusted by the sensor in the chamber. If there is doubt, we can measure the light manually. You are responsible for collecting the data you need for your project.
It looks as if there is too little/too much light in the chamber. What might be wrong?	Did you place the light sensor in a representative spot? Is the light sensor dirty or wet? The light intensity in the chamber is automatically adjusted by this sensor.

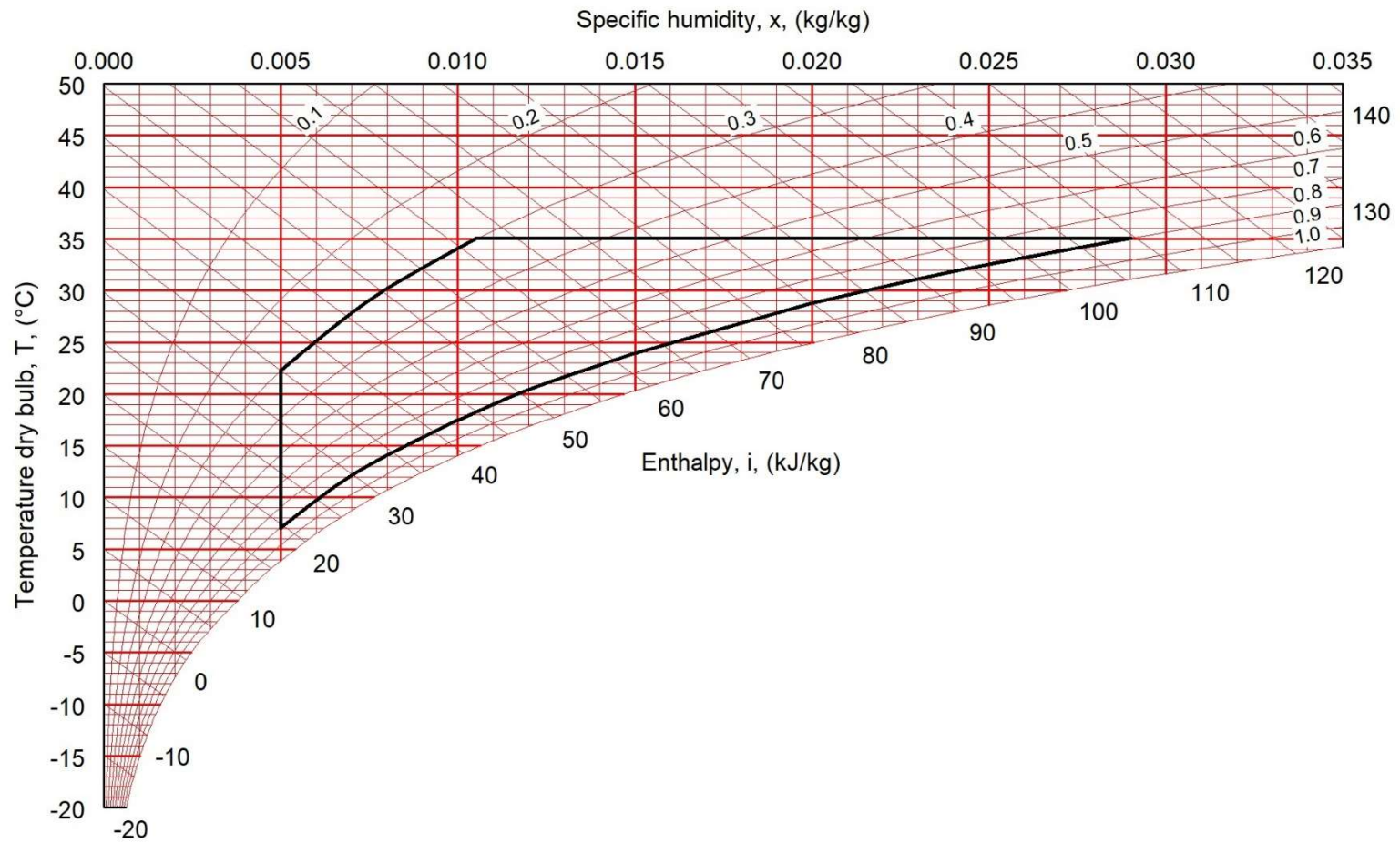
Can I use the drying cabinets in the Biotron?	Yes, if you know how to handle them. Do not forget to book it, and clean it when you're done!
Can I move a scale?	Only your own!
Can you provide me with a graphical presentation of the climate recordings from a chamber?	Climatic data can be retrieved as a text file, from which you can create your own graph. We can also show you a graph directly on the screen in the control room.
Can I supply extra light in a dark chamber?	No, not without discussing this with the Biotron staff. Light in a dark chamber will trigger the alarm.

Specifications

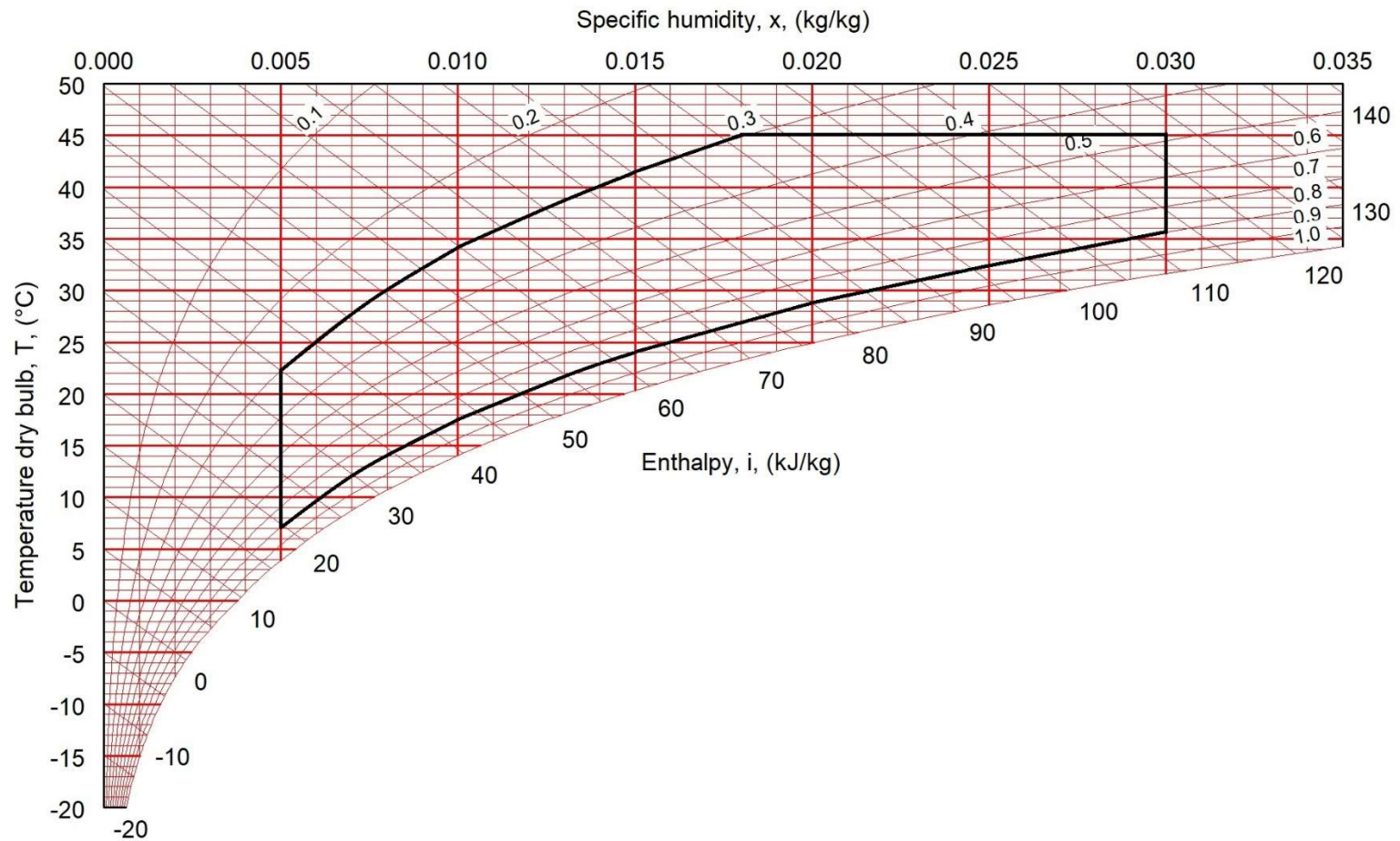
Climate chambers KK	
Temperature:	7 chambers +2 - +35 °C 2 chambers +2 - +45 °C 3 chambers -5 - +35 °C
Humidity	Relative 30-80 %, Absolute 0.005-0.030 kg/kg
Ramp speed:	Temperature 10 °C per hour, humidity ca. 10 %-units per hour.
Light:	10 chambers with metal halogen 150-1000 $\mu\text{mol m}^{-2} \text{s}^{-1}$, Adjustable 1) 2 chambers with LEDs, 50-500 $\mu\text{mol m}^{-2} \text{s}^{-1}$. Adjustable spectrum 1)
Carbon dioxide	Up to 1000 ppm
Size:	3050x3200x2280 (3250x3320x2340) width x depth x height mm
Climate chambers OK	
Temperature:	4 chambers +5 - +35 °C
Ramp speed:	Temperature 10 °C per hour
Light:	Cold white fluorescent tubes, 50-250 $\mu\text{mol m}^{-2} \text{s}^{-1}$, Adjustable
Size:	1600x3540x2200 (2000x4180x2200) width x depth x height mm
Climate chamber DK	
Temperature:	4 chambers +7 - +35 °C
Humidity:	Relative 30-80 %, Absolute 0.005-0.026 kg/kg
Ramp speed	Temperature 10 °C per hour, humidity ca. 10 %-units per hour
Light:	Natural daylight
Suppl. lighting	Yes
Carbon dioxide	Up to 1000 ppm
Shading screens:	No
Light shielding:	Against neighbouring chambers
Size:	3250x4230x2280 (3250x4390x2500) width x depth x height mm
Climate chamber VK	
Temperature:	4 chambers, capable of +20 °C at -20 °C outside
Humidity:	Humidification with nozzle
Light:	Natural daylight
Suppl. light	Yes
Shading screens:	Yes
Light shielding:	Against neighbouring chambers
Size:	2970x4230x2280 (3240x4390x2500) width x depth x height mm

1) The range for light intensity in KK might change

Working area for climate chambers KK02-09 and KK11-KK12



Working area for climate chambers KK01 and KK10



Working area for climate chambers DK

