Terms of Use for the Kranzberg Forest Experimental Research Plot

The Kranzberg Forest Experimental Research Plot is a unit of the Technical University of Munich (TUM). The site of the experimental plot is made available for research purposes by the Bavarian State Forestry Authority (BaySF). The Kranzberg Forest experimental plot was established in 1996 and has been part of the TUM Plant Technology Center (PTC) since its founding. The PTC Forest Research Unit (FRU) is responsible for coordinating and organizing infrastructure maintenance, permanent measuring equipment, and research activities (Scientific Coordinator: Dr. Manuela Baumgarten, TUM PTC, FRU)

The experimental plot consists of a fenced enclosure in a mixed spruce and beech forest owned by the Bavarian State Forestry Authority (longitude: 11° 39′ 42″ E, latitude: 48° 25′ 12″ N, altitude 490 m above sea level). The experimental plot is part of a Bavaria-wide monitoring network for the long-term recording of tree responses to environmental conditions. Four 25 m high scaffolding towers are available, three of which are connected by platforms at five different heights to allow access to the canopy.

In addition, various shelters for equipment, measuring instruments, and simple laboratory activities are available on the experimental plot. Since 2001, a Potain rotating tower crane (45 m high, 50 m boom) has been located approximately in the middle of the experimental plot, providing direct access to the tree crowns for sampling and physiological measurements via a remote-controlled one- or two-person gondola. The Kranzberg Forest experimental plot is incorporated into a global canopy crane research network (International Canopy Crane Network, ICCA, Basset & Wright, 2003). The measuring station is connected to the power grid and equipped with a telephone connection (08161/71 6590) and internet access. During the growing season, a portable toilet is set up outside the plot.

Depending on the objectives of the various research projects, some of the trees may undergo additional experimental treatments. For example, the experimental plot has been utilized since 2013 for the KROOF experiment (periodic drought stress induced by rain exclusion roofs, PL Prof. Dr. Th. Grams, Chair of LSAI AG Ecophysiology) and, since 2021, for an experiment as part of the EU project HoliSoils (Dr. Fabian Weikl, Chair of LSAI AG Ecophysiology). Since 2025, the plot has been used for research purposes by Prof. Dr. R. Peters (Chair of Tree Growth and Wood Physiology). Various other TUM institutions, as well as national and international research institutions, also use the plot for research and teaching.

These Terms of Use stipulate the following:

1) All activities on the experimental plot require prior authorization from the users' immediate supervisors.

   All research groups, Chairs, departments, and research institutions within and outside TUM are required to conduct a risk assessment for the work assigned by their supervisors to users operating on the experimental plot. A risk assessment for the experimental plot will be provided by the PTC FRU.

   Supervisors are responsible for ensuring that the persons they appoint (users) receive appropriate safety guidelines for the work to be performed and the hazards present on the experimental plot.

   Please note:

   - Use of the crane must be expressly authorized in writing by the user's supervisor.
   - All external users (not affiliated with TUM) are responsible for obtaining confirmation from their relevant accident insurance provider that they are covered by insurance when transporting people with the crane.

2) Work on the experimental plot is severely restricted for pregnant women (biological hazards, e.g., tick infection, risk of tripping). Minors are prohibited from working on the experimental plot.

3) The crane, scaffolding, and platforms may not be used during thunderstorms, storms, or icy conditions.

4) The site must be vacated immediately in the event of strong winds, storms, or thunderstorms.

5) A helmet must be worn at all times while on site. Helmets are available in the office trailer and in the shelter.

6) Each individual must take responsibility for their own safety. This includes wearing sturdy, non-slip footwear and suitable clothing that will not get caught on anything.

7) Insect repellent and sunscreen (available on site) must be applied as required by weather conditions.

8) Users must undergo instruction before using cranes, scaffolding, roof structures, ladders, electrical machinery, and other measuring equipment belonging to the FRU.

9) When working alone on the plot, a member of the research team must be informed, and a regular check-in procedure must be established with this person. A telephone must be carried for this purpose (the researcher's own cell phone or the telephone with emergency call functions (available in the office trailer)).

When using the crane with the gondola, another person must always be present on the ground (see 14).

10) It is prohibited to stand underneath suspended loads and below the scaffolding when it is in use by others.

11) When using the freight elevator (gondola), ensure that the load is secured.

12) Scaffolding towers with platforms may only be accessed by selected and instructed persons (users must follow operating instructions and meet the health requirements).

    Use of scaffolding: When climbing and crossing the platforms, both hands must be free to hold onto the railings. Loads must be transported up or down using the elevator (gondola), crane, a backpack, or a shoulder bag. If work requires leaning over the railing, safety belts must be worn. These are available in limited numbers and can be used after instruction.

    Exercise caution when moving on scaffolding.

    Tools and other equipment must be secured with ropes to prevent them from falling and endangering other persons.

13) Only instructed and specially qualified persons are permitted to use the crane (operating instructions, training). Use and proper shutdown (disconnecting from power and securing against wind) must be recorded in the crane logbook. In addition to the maximum of two persons in the gondola, one person must be present on the ground.

    Personal protective gear (harness and helmet) must always be worn when using the gondola, for which training is mandatory. Unauthorized persons are prohibited from climbing onto the crane.

    Be advised: At outside temperatures below +5 degrees Celsius:

    When the crane is disconnected from the power supply (recommended due to the risk of thunderstorms), wait 1/2 - 1 hour after reconnecting and switching on the crane's main switch before using the remote control, so the crane can reach operating temperature.

    Important: Under no circumstances should the remote control be switched on during the warm-up period, as this will immediately activate the electronics and may trip the safety fuse or, in the worst case, irreversibly damage the frequency converter.

14) Before hazardous substances are brought to the site, the following requirements must be met:

    - The type and quantity of hazardous substance must be reported to the FRU in writing.

- A safety data sheet from the manufacturer is required for each hazardous substance.

- Instructions for use in accordance with § 14 of the Hazardous Substances Ordinance must be prepared and filed in the on-site office trailer (and digitally).

If necessary, an appropriate hazard symbol must be affixed.

If absolutely necessary, the hazardous substance may be stored in the outdoor safety cabinet (must be entered on the hazardous substances list).

15) Work on electrical equipment and electrical systems may only be carried out by qualified specialists (e.g., Thomas Feuerbach, Stefan Huber, TUM Facilities Management, licensed electrician); non-specialists are prohibited from entering the electrical distribution room.

16) The operation of devices with a connected load of more than one kilowatt must be reported before initial power-up.

17) To avoid soil compaction, users must remain on the wooden walkways in the marked KROOF plots. If users need to leave the walkways briefly, they must use grass protection mats to create a temporary walking path.

18) Research projects require the approval of the PTC FRU management (in consultation with the heads of other current TUM research projects on the experimental plot). The type and scope of any sample material to be taken, as well as the frequency, must be disclosed to the PTC FRU scientific coordinator and agreed upon with the heads of the other research projects on the experimental plot. The sampling site must be marked where necessary.

19) All users must familiarize themselves with the emergency facilities and procedures.

In case of emergency, call: 112 from a landline; 089/ 289-112 or 112 from a mobile phone, and inform the emergency services that the incident concerns a TUM facility:

Kranzberg Forest Research Facility, 85402 Kranzberg-Oberthalhausen, entrance on Berghauser Str. is known to the TUM rescue coordination center as “**Kran Oberthalhausen**".

Rescue meeting point: FS-1032, opposite Hotel Forst on Wippenhauser Str. From there, opposite, into Berghauser Straße, turn left there towards the forest, and keep right twice.

First Responder Tel.: 08161/ 71-xxxx:; S. Huber -3087; B. Hofmann 4872, Y. Stengele -4833, KH. Häberle -3717, M. Baumgarten -4786;

20) Telephone number for the Kranzberg Forest experimental plot: 08161 71- 6590

I have read and understood the "Terms of Use for the Kranzberg Forest Experimental Research Plot."

Date	Name	Signature

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