

User Guidelines (Nutzerordnung) of the Phenospex PlantEye f600 Microscan Device at the HHU Düsseldorf

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GENERAL INFORMATION

Company: Phenospex, Herleen, The Netherlands. www.phenospex.com

The Phenospex PlantEye f600 sensor (<https://phenospex.com/products/plant-phenotyping/planteye-f600-multispectral-3d-scanner-for-plants/>) is a multispectral 3D scanner that allows high throughput quantification of morphological and spectral parameters such as leaf area, digital biomass, plant height, light penetration depth and chlorophyll content (greenness). For explanations on all phenotypic parameters measured by the PlantEye F600, see <https://phenospex.helpdocs.com/plant-parameters-phena-2-0>. The PlantEye is a portable phenotyping platform for automated, non-invasive plant phenotyping. It automatically assigns images and their output measurements to the identity of the plant in the pot and hence to previous plant measurements, allowing to draw individual plant growth curves. The MicroScan is the portable phenotyping device implementing the PlantEye f600 sensor (<https://phenospex.com/microscan-for-small-digital-phenotyping-tasks/>).

The PlantEye measurements are visualized and analysed with HortControl, the central software developed by Phenospex (user friendly interface). HortControl is a web-based software, accessible when the associated computer is connected to the Phenospex (see below).

The equipment in Düsseldorf includes:

- . The sensor PlantEye F600
- . The Microscan frame and table
- . The transport case (Pelicase)
- . The connecting cables: network/communication cable between the frame and LAN port of the laptop, the trigger/power cable to connect between frame and PlantEye, the power supply
- . The handheld scanner
- . The manuals (Microscan Quick Setup manual and HortControl User manual)

ACCESS

Location: HHU Building 26.14 Level 1 Room 14.

The Phenospex PlantEye f600 Microscan is the property of the Institut of Botany lead by Petra Bauer and is accessible on-demand to research groups from the University of Düsseldorf that are part of the CRC TRR341. Access to the PlantEye Microscan is managed by Marie Knopf from Petra Bauer's group. She will assist you with the set up and connexion and will provide the necessary training before its first use.

- ⚠ An initial training is mandatory before first access to the phenotyping platform.
- ⚠ An online booking calendar is used to create, modify and delete reservations of the PlantEye (see below).

GENERAL RULES, USAGE GUIDELINES AND USER RESPONSIBILITIES

After the initial training, a user can independently book and use the Phenospex PlantEye. At any time during usage, users are free to ask the coordinator/instructor for assistance.

Manuals for the PlantEye f600 Microscan and the software HortControl are available in the room with the device. The HortControl manual can also be found within the software (under the information bar) and in the Phenospex Sciebo folder. It is advised to read through the HortControl User manual before using the phenotyping platform.

There is a laptop affiliated to the PlantEye, users can either use this computer or their own one.

Connecting to HortControl: HortControl is a web-based software, which is Google Chrome compatible (it is advised to update to the latest Chrome versions prior to use). The user can connect to HortControl by typing the IP address of the PlantEye: **ms-6042.local** (also written on the PlantEye)

Login: When connecting to HortControl, a login prompt will appear and you will be asked for the credentials. Use the user credentials: **User = psx-usr, Pwd = psx-usr**.

Multiple experiments will be running on the phenotyping platform simultaneously (managed with the Experiment Board in HortControl).

Setting up a new experiment in HortControl involves

- reserving experimental block(s)
- after configuring your experiment blocks, create a name for your experiment

The PlantEye f600 has a 1,8TB storage space and only a limited number of experiment blocks available. Thus it is not an infinite resource and old experiments will be deleted by the administrator when space is needed and blocks need to be set free, after contacting the owner of the experiments. It is therefore important to be able to trace back the person behind the experiments/reserved blocks. To this purpose, we ask for the following rules:

- ⚠ Your name should be included (Familyname_firstname_xxx) to the name of your experiment
- ⚠ A check-in sheet is attached to the PlantEye. Please fill in your name, AG (Arbeitsgruppe), TRR341 Project ID, the reserved block numbers, your experiment name, and the check-in and check-out times.
- ⚠ Write down your reserved block(s) numbers and the name of your experiment for yourself, to be able to retrieve it later, especially for long-term experiments with several measurements in time.

Once your experiment is done (all your sets of measurements have been taken), we ask you to 'Stop' your experiment (Dashboard -> Experiment-> Stop Experiment), to free the blocks for other users. Your

experiment will not be deleted when being stopped and you will still be able to download the data, but you will not be able to add any more data to it. Until it is stopped, your experiment stays 'Active', your blocks are still reserved for you, and you can keep adding later measurements.

Users are obliged to handle equipment with precaution and according to the instructions given during training. The Microscan table should be clean after use. The PI is responsible for the behaviour of the user. In case of incorrect behaviour, we reserve the right to restrict the access to the phenotyping platform.

RESOURCE BOOKING GUIDELINES AND PRIORITIES

The online booking system is available at <https://booked.uni-koeln.de/trr341planteye>

Users have to create a user account for the booking system (or after invitation). User data (name, email, institution, TRR341 project) are stored in the booking system and secured with a personal user login.

While reserving the PlantEye in Booked, the Title and Description fields are only optional, they do not need to be filled.

Reservations in the booking calendar are mandatory prior to the usage of the Phenospex PlantEye (2 days before use). Short-term cancellations should remain an exception. Reservations must be first approved by the resource administrator (Marie Knopf).

In case of technical issues, the resource (device) will be blocked as early as possible and users with conflicting reservations will be notified.

The group of Petra Bauer have priority access. Otherwise, the reservation and access will be approved on a first-come first-serve basis

DATA HANDLING, SECURITY AND STORAGE GUIDELINES

During usage of the phenotyping platform, the data are stored in the device's computer storage (3D .ply files and tabular .csv files with processed plant data).

⚠ After data acquisition, it is recommended for users to download their data directly on their laptop for data security. A backup of the system will be done regularly and stored separately; however, it will not be done after each single use, and the 3D files are not included in the system backup. You will be shown how to download your data in the training session.