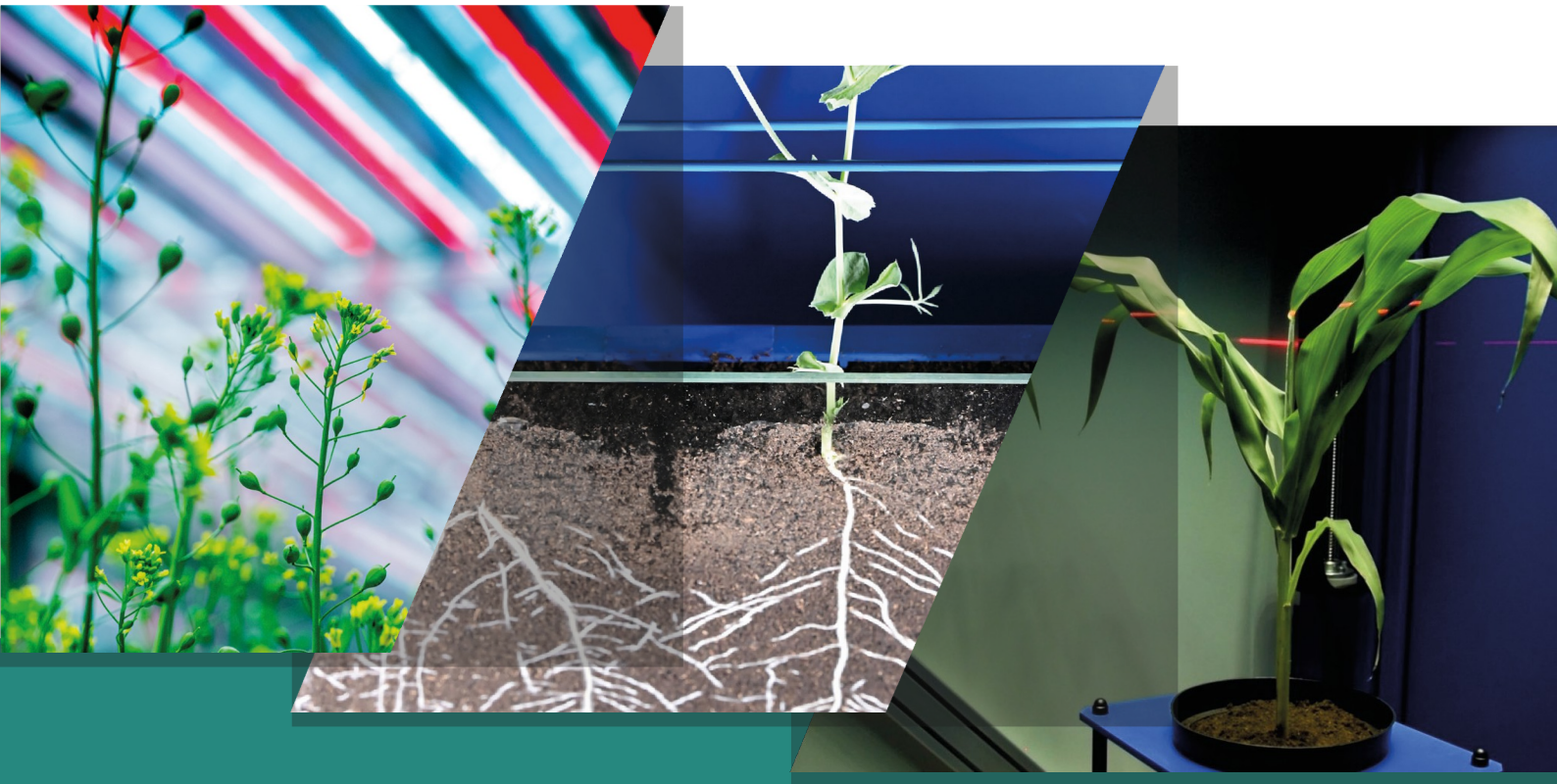




Excursion PSI & Research Center

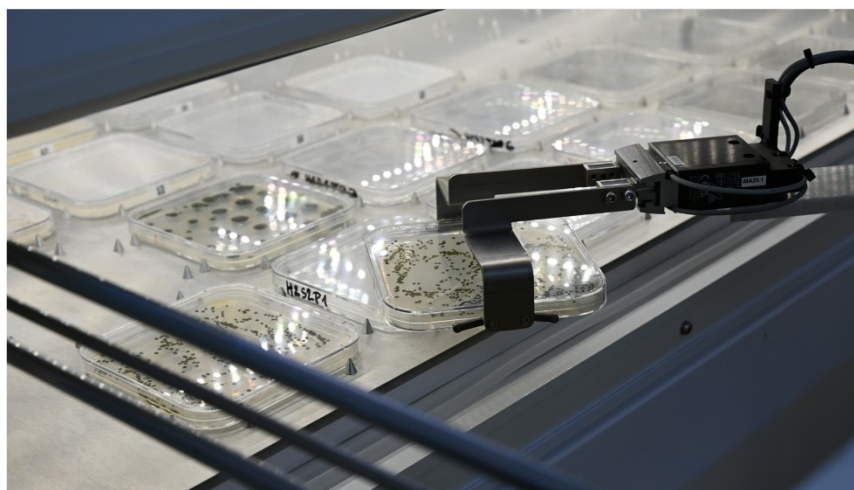
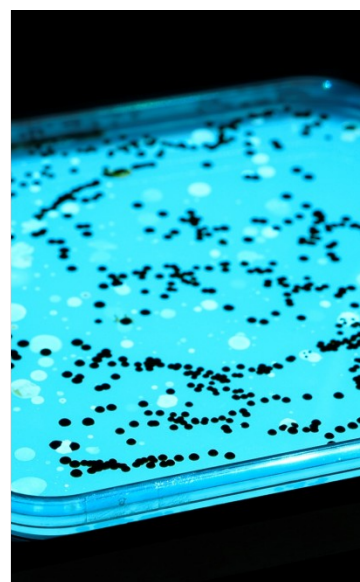
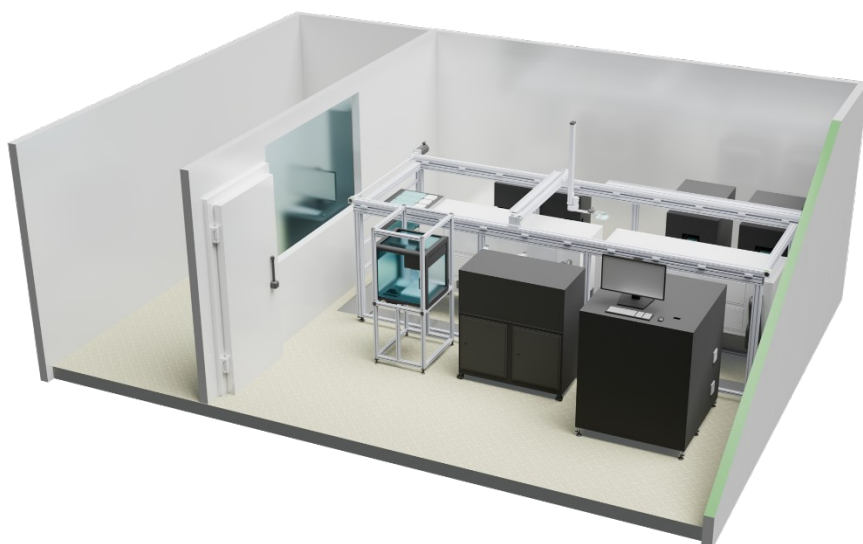
June 28th 2026

Program

AlgaeScreen: Expanding the Boundaries of Colony Phenotyping

Screening thousands of algal colonies continuously, without manual intervention – that is the core idea behind **AlgaeScreen**, a robotic phenotyping platform recently installed at Center Algatech in Třeboň, Czech Republic. The system integrates automated sample handling with six complementary measuring stations, covering everything from colony growth tracking to chlorophyll fluorescence, VNIR hyperspectral imaging, and scanning fluorescence spectrometry. A unique future capability of the platform is the integration of a scanning Raman microscope, which will add molecular-level characterization to imaging and fluorescence-based colony phenotyping.

During this session, we will introduce the system architecture and connect live to Třeboň to demonstrate the platform in operation, including real data from ongoing experiments. A hands-on look at what modern high-throughput algal phenotyping can look like in practice.

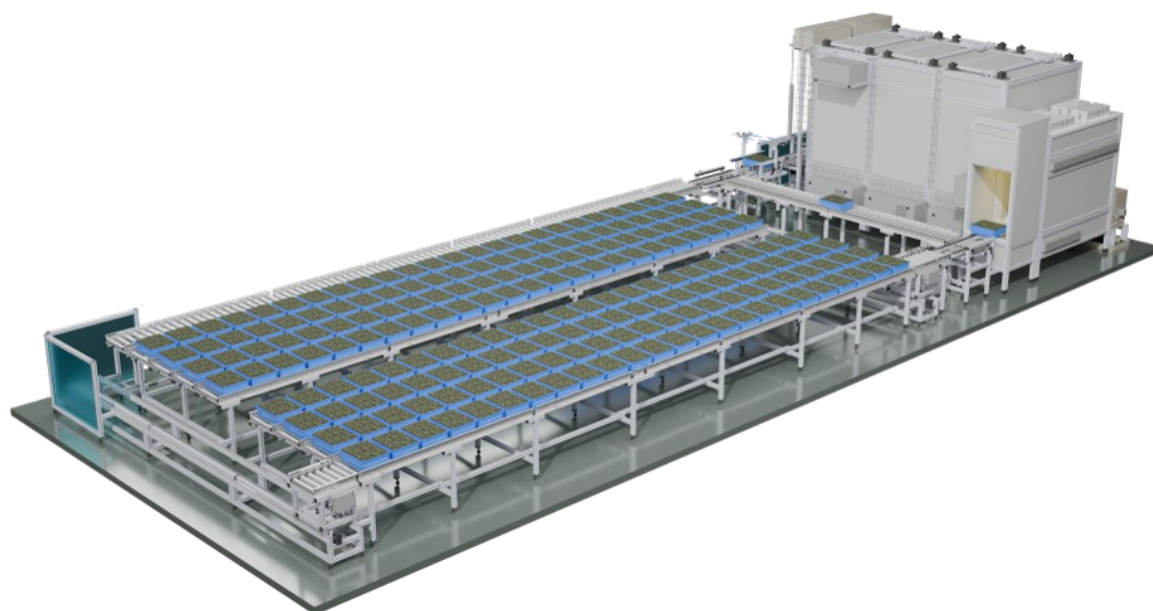


PlantScreen™ Modular System: Integrative high-resolution shoot phenotyping

How would you phenotype thousands of plants with multiple imaging technologies while maintaining throughput, randomization, and experimental precision? **PlantScreen™ Modular systems** are designed as modular fully autonomous front-to-end solutions for phenotyping of above-ground and/or below-ground properties of plants in scale ranging dynamically from Arabidopsis to crops plants. Plants are transported on conveyor belts from the loading zone or growth area to the imaging area equipped with automatically operated state-of-the-art sensors integrated into light-insulated imaging cabinets. PlantScreen™ transportation trays with modular design options for pots from 250 ml to 5L are used for efficient transportation of plants up to 180 cm in height from the growing zone to the imaging units and automated plant handling zones as irrigation, nutrient mixing and spraying units.

Cutting-edge imaging sensors include multispectral chlorophyll fluorescence, top and side RGB, top VNIR/SWIR hyperspectral, top or side thermal and top or side 3D laser scanner. The imaging units are physically separated from the growth area facilitating the parallelization of measurements via a sample loop and thus improving the throughput, randomization flexibility and sensor utilization.

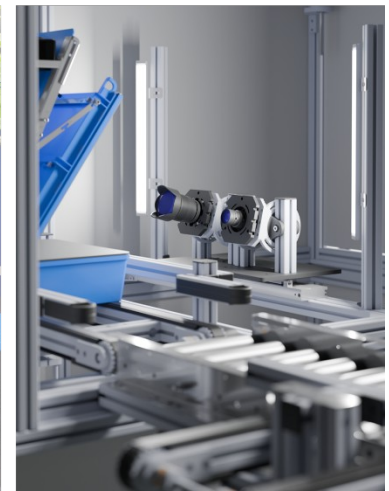
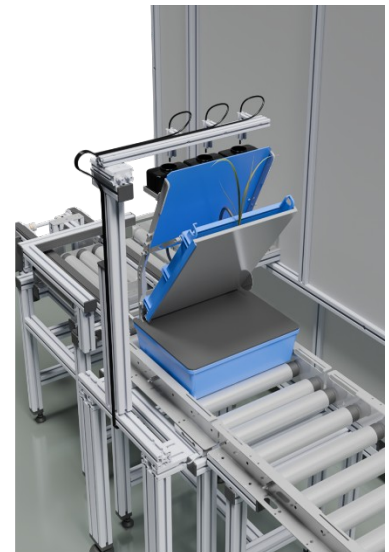
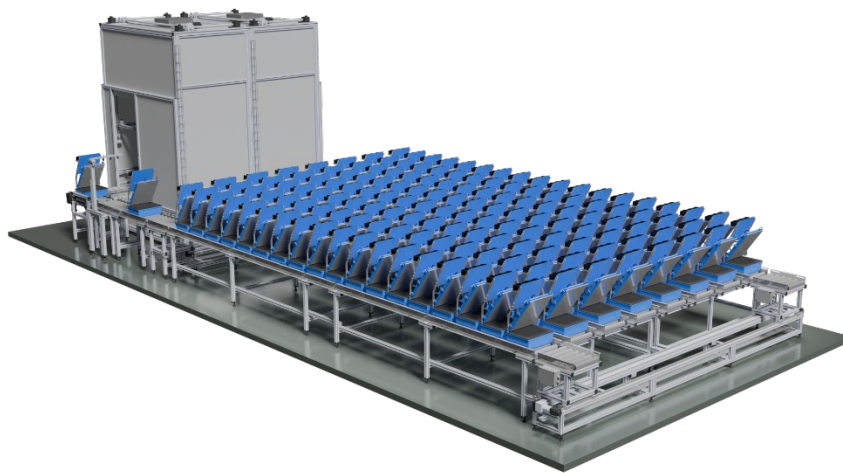
During this excursion, visitors will get an inside look at a new PlantScreen™ Modular platform currently being manufactured for the Plant Breeding and Acclimatization Institute (IHAR) in Radzików, Poland. We will present the system architecture, explain key design concepts, and demonstrate how innovative imaging modalities can be integrated into a single automated phenotyping workflow for plant breeding, crop research, and stress biology.



PlantScreen™ Root System: Belowground Dynamics Revealed

Interested in assessing the morphological traits and growth dynamics of both roots and shoots simultaneously?

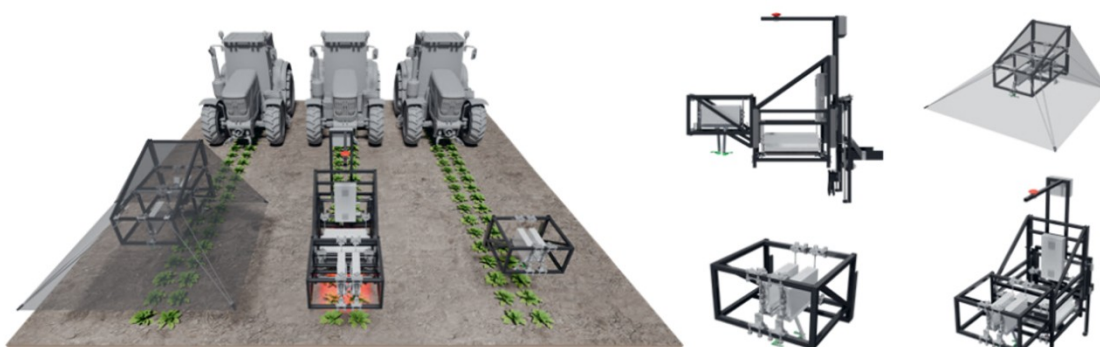
Join us for a live demonstration of the state-of-the-art **Root Phenotyping System**, an advanced robotic platform specifically designed to study shoot and root system architecture growing in rhizoboxes. Experience how integrated RGB and hyperspectral (NIR) imaging, combined with automated analysis pipelines, enables non-invasive monitoring of plant growth, water content, and treatment responses. We will demonstrate the complete workflow from image acquisition to trait extraction, visualization, and advanced data analysis.



PlantScreen™ Field System: Proximal crop phenotyping in real-world agricultural environments

Field Systems are autonomous and semi-autonomous mobile platforms for fast and accurate to analysis of crop structural and functional traits in real-world agricultural environments. The **PlantScreen™ Field** sensor module is modularly mounted on field vehicle (e.g. high-clearance tractor) on height adjustable arm. The module is designed for modular integration of user defined set of imaging sensors. The system navigates the driver with RTK-GPS precision to user defined measuring points and automatically runs the pre-defined measuring protocols. Sensor specific automatic calibration functions are implemented to ensure optimal image exposition and correction implementation for the ambient environmental conditions. After the measurement data are automatically synchronised and stored in the internal database.

During this session, we will describe the FieldSystem architecture and demonstrate the functional capacities using data acquired with the PlantScreen™ Field System installed in McGill University in Canada.



Excursion Itinerary

PSI Phenotyping Platforms

Participants are divided into four groups of about 15 people, assigned during registration. You will visit four phenotyping stations in your group, rotating every 30 minutes. Find your group letter (A, B, C or D) below to see your personal route, including where each station is located.

Schedule

08:30 – Departure from Hotel Atlantis

09:00 – Arrival at PSI

09:15 – Excursion begins

12:00 – Excursion ends

12:15 – Transfer to lunch

13:00 – Lunch

Your Group's Route

Each station visit lasts 30 minutes. Transfers between stations are usually just a couple of minutes – only the walk to and from the Research Centre takes closer to 15 minutes, which is already built into the schedule.

Time	Group A	Group B	Group C	Group D
09:15–09:45	Station 1 <i>Bldg 3 – Meeting Room</i>	Station 2 <i>Bldg 3 – Hall</i>	Station 3 <i>Bldg 2 – Hall</i>	Station 4 <i>Research Centre</i>
10:00–10:30	Station 2 <i>Bldg 3 – Hall</i>	Station 3 <i>Bldg 2 – Hall</i>	Station 4 <i>Research Centre</i>	Station 1 <i>Bldg 3 – Meeting Room</i>
10:45–11:15	Station 3 <i>Bldg 2 – Hall</i>	Station 4 <i>Research Centre</i>	Station 1 <i>Bldg 3 – Meeting Room</i>	Station 2 <i>Bldg 3 – Hall</i>
11:30–12:00	Station 4 <i>Research Centre</i>	Station 1 <i>Bldg 3 – Meeting Room</i>	Station 2 <i>Bldg 3 – Hall</i>	Station 3 <i>Bldg 2 – Hall</i>

The Stations

Station 1 – AlgaeScreen (Building 3, Meeting Room)

A robotic phenotyping platform at Centrum Algatech in Třeboň that screens thousands of algal colonies automatically. We will connect live to Třeboň to see the system in operation.

Station 2 – PlantScreen™ Modular System / Radzików (Building 3, Hall)

A look inside a new modular shoot-phenotyping platform currently being built for the Plant Breeding and Acclimatization Institute (IHAR) in Radzików, Poland.

Station 3 – PlantScreen™ Root System (Building 2, Hall)

A robotic platform that studies root and shoot growth together in rhizoboxes, using RGB and hyperspectral imaging.

Station 4 – PlantScreen™ Field System (Research Centre)

A mobile platform mounted on a field vehicle for crop phenotyping directly in the field, demonstrated with real data from McGill University, Canada.

Good to Know

- Please be at the hotel lobby by 08:30 – the bus departs promptly.
- Comfortable shoes are recommended (some stations involve walking outdoors).
- A guide will accompany your group and keep track of timing – just follow along!