

Rhizotron chamber

Rhizotron chambers are used for root zone observations and the investigation of the influence of different environmental factors on the growth and development of the plant root system. In addition to the root observation, several boundary conditions of the root growth can be recorded and controlled. Depending on the research aim, the effect of different stress factors such as temperature stress (in conjunction with UGT soil temperature control), water and drought stress (in conjunction with UGT IDS plant) or further chemical (e.g. pH value, content of different substances in soil), biological (e.g. age of the plants) and physical (e.g. bulk density, soil type) stress factors can be investigated. In conjunction with the UGT Soilinsight®, for certain rhizotron chambers high-resolution images of the root system can be recorded automatically over the growing period which for example then can be used for a computer-based determination of the root

density distribution. Due to the vividness of the observation system it is also perfect for school and teaching experiments.

The size of rhizotron chambers can range from a few centimeters for laboratory plants such as Arabidopsis, over large volume chambers for young trees to chambers with a height of 1.5 m for experiments with grain or crops. Depending on the requirements, the chambers can be placed together in rhizotron blocks and can be subjected to the same or varying boundary conditions. Furthermore, the rhizotron chambers can optionally be equipped with water content sensors, tensiometers, suction cups, oxygen probes, temperature sensors, and pH-foils for the monitoring of various boundary conditions and state variables. Depending on the requirements, the dimensions and instrumentation of the rhizotron chambers can be adapted. Rhizotron chambers can be placed in the laboratory or outdoors.



Exemplary sensor assembly



Trolley for removing and inserting the chambers



Rhizotron block for the reception of rhizotron chambers with a window size of approx. 30 x 42 cm

Ready-To-Go Lysimeter

The Ready-To-Go Lysimeter is a small lysimeter station for soil columns with an area of up to 0.5 m² and a length of up to 1 m. The Ready-to-go lysimeter is suitable both for disturbed soil (filled by hand) and for undisturbed soil monoliths when using the patented UGT excavation technology. The compact lysimeter station consists of a PE-HD lysimeter vessel with weighing system and seepage tank with tipping bucket, a weather station, a data logger and a range of soil hydrological sensors. The system operates as plug and play system, so that the entire station can be erected and put into operation without special tools or specialist personnel. The data are displayed on the internet using the SVADSS online data management system. Up to four Ready-To-Go Lysimeters can be connected to one data logger.



The Ready-To-Go Lysimeter is the ideal supplement to an existing weather station for directly calculating evaporation.

Advantages

- Inexpensive
- Small, and can therefore be handled and exported without large machinery
- Can be installed by the user himself



Digital weighing monitor UGT WM 100

Lysimeters are weighed at UGT with three precision weighing cells of the accuracy class C3 / C6 and the digital weighing monitor UGT WM 100 with a large graphics-capable LCD display. The stainless steel structure made of tubular steel on B15 concrete base provide a safe base for the weighing technology. This so-called load triangle guarantees a stable and exact installation of the weighing cells as the foundation for a precise measurement. The weighing cells are installed with the assistance of shock mounts which are torque and shear-force free. The use of shock mounts facilitates mechanical flexibility of the force input into the scales. Tensions between the weighing cells through temperature fluctuations, flexion and vibrations which would lead to considerable measurement errors are therefore prevented.



In addition to the centralised data acquisition the new weighing monitor facilitates direct communication with the connected lysimeter. In the lysimeter mode, measurement curves from earlier measu-

rement periods can be graphically displayed in addition to settings and measurement interval changes. Irregularities can therefore be recognised directly during inspections of the lysimeter.