

SIMU

Combined climatic chamber and surface runoff simulator

What impact do changing weather conditions have on the soil and nutrient leaching?
- SIMULating natural phenomena

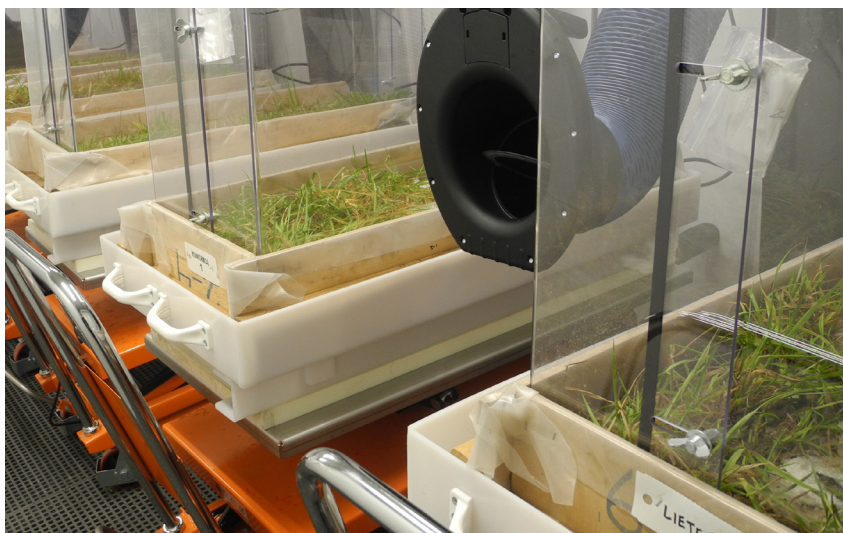
SIMU, a combined climatic chamber and surface runoff simulator, helps to simulate changes in temperatures and rainfalls resulting from climate change, and to analyse their impact on the soil and different forms of runoff.

SIMU helps to improve research efficiency as it is fast and economical. Main aim of the research is to reduce nutrient loads in watercourses.

Fast-forwarding through ten springs - SIMU quickly offers practical information

Compared with laboratory measurements, SIMU's advantage is that soil samples investigated in a chamber maintain the natural pore structure and plant cover and, therefore, also the natural variation of soil.

In nature, the largest part of runoff takes place in spring. This is why a reliable leaching study in the field takes at least a year. Compared with field testing, the absolute strength of the simulator is its speed: SIMU helps to fast-forward through ten successive springs, at any time of the year.



Temperature and precipitation conditions can be simulated cost-efficiently and identically as many times as is necessary. It is easy and reliable to compare different treatments, as the research conditions remain unchanged and there is a sufficient number of parallel measurements.

Service customised according to customer needs

Leaching studies can be conducted using any type of soil and any treatment. A single chamber has room for six soil samples at a time. Tests and analyses help to respond to the following questions:

- What is the most effective treatment? Treatments can include fertilisers, crop protection agents, plant species, precipitation, phosphorus binding agents and soil types etc.
- What happens to leaching if precipitation doubles?
- What happens to leaching if the temperature rises five or ten degrees?
- What impact does drought have on leaching?
- What is the plant tolerance against freezing temperatures and ice lenses? Are crop protection agents more easily leached from peatland than from fine sandy soil?
- Can a new potential pathogen spread to Finland? Can it survive the changing winter conditions?



SIMU is a unique high-tech research platform in the world

Based on its long-term research activities, Luke has expertise in studying the impact of physical, chemical and biological soil processes on nutrient leaching. These phenomena can be studied in various ways in field or laboratory conditions or by using combinations of conventional analytics and modern methods and innovation. The SIMU environmental research device and its methodology constitute a unique research system.

No similar research platform which combines climate impact and the measurement of surface runoff is used anywhere else.

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