



MARTIN-LUTHER-UNIVERSITÄT
HALLE-WITTENBERG



Soil Science Colloquium - Halle

Prof. Dr. Steffen Schlüter

UFZ Halle, Department Soil System Science

15. October 2026 - 4pm

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Harnessing long-term field experiments for soil research and education

(sort of inaugural lecture)

Abstract:

Long-term field experiments are designed to investigate the effects of management practices such as crop rotation, fertilisation and tillage on various soil functions, including biomass production. Long-term monitoring of basic properties on an annual basis is often combined with individual campaigns involving more laborious measurements. The value of these experiments increases with duration, as some soil dynamics evolve slowly and long-term records are needed to distinguish between annual fluctuations and genuine trends.

Long-term field experiments also provide a very suitable framework for teaching for several reasons. Typically, the experimental design addresses research questions relevant to agriculture and natural resource management master's programmes, including soil science, plant nutrition, and statistics. The close proximity of field experiments allows students to take direct measurements and analyse and present results during a semester. The existing back catalogue of data facilitates contextualising one's own data and initiating discussions.

Over the past six years, I have visited several long-term field experiments in the area (in Halle, Bad Lauchstädt and Bernburg, among others) as part of the "Soil Structure Analysis" module and for master's thesis projects. Students are typically distributed into groups and supervised by different colleagues, either measuring soil physical properties (microstructure and hydraulic properties), soil chemical properties (carbon, pH and nutrients) or biological properties (soil respiration, mesofauna abundance and feeding activity). At the end of the semester, each group presents their findings, which are then discussed collectively. In this talk, I present a selection of past campaigns focusing on bare fallow, liming, and global change experiments.