SUITMA 11
11 th Conference on Soils of Urban, Industrial, Traffic and Mining Areas
Soils and the food, water, energy nexus
05.09.– 09.09 2022 Berlin, Germany

Mobile CO_2 measuring device for analysing the CO_2 concentration in the soil air

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Abstract

The CO_2 concentration of soil air is an important indicator of carbon turnover and the aerationstatus of the soil. In particular, the possibility to diagnose soil structure disturbances and soil compaction in a very short time based on the CO_2 concentration of the soil air shows the potential that CO_2 concentration analyses have in the field of expertise. Since the measurement of soil gas concentrations with a gas chromatograph (GC) is associated with high analysis costs and time-consuming handling, the indicator value of CO_2 concentrations has been used at best in the scientific field. Based on a measuring device developed by Kuhnke and Gaertig in 2012, a mobile CO_2 measuring device was built in cooperation with "Sanfte Mess- und Regeltechnik GmbH" (Göttingen), in which soil air is sucked in from a defined depth and the CO_2 concentration is analysed in situ by a sensor that measures on an infrared basis. Comparative laboratory tests with a GC show that the measurement accuracy of the two devices is comparable.