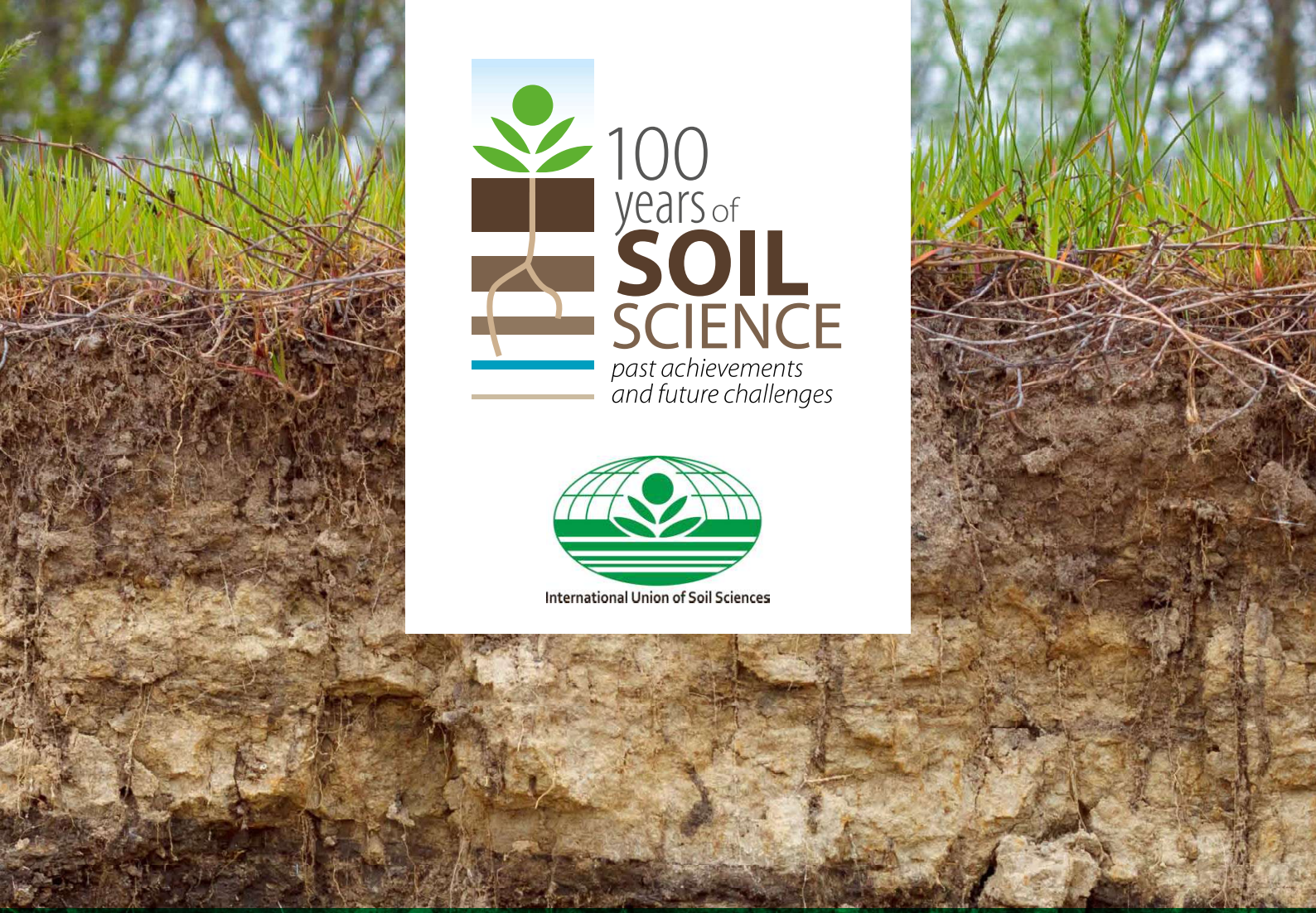

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ABSTRACT BOOK

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4. Soil health in achieving the Sustainable Development Goals
4.30 133622 - Soil Organic Matter Stability as Key Driver to Soil Carbon Sequestration

EXPLORING SOIL ORGANIC CARBON PERSISTENCE FOR SUSTAINABLE LAND MANAGEMENT PRACTICES: A THERMAL ANALYSIS APPROACH

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To ensure the sustainability of an approach to maintain or increase soil organic matter, we need to understand the particularities of various soil organic carbon (SOC) fractions and their response to alterations in soil management practices. Diverse methods of SOC fractionation have been used to isolate and study SOC. Recently, soil physical fractionation has regained popularity due to its simplicity. Soil physical fractionation divides the soil in two main pools, particulate organic matter (POM) and mineral-associated organic matter (MAOM). Yet, the biochemical quality and therefore persistence of the SOC present in these two fractions remain unknown. SOC thermal fractionation provides detailed insights into composition, turnover rates, and stability mechanisms, crucial for advancing sustainable land management practices. This study aims to investigate the relationship between thermal stability and SOC persistence in bulk soil, in the POM and the MAOM fractions – emphasizing the necessity for rapid, precise, and affordable methods. To do so, we will establish a standardized thermal method for determining SOC persistence, comparing thermogravimetry, differential scanning calorimetry and a multiphase carbon and moisture determinator to explore commonalities in addressing SOC persistence. For that, a wide range of soils collected from multiple locations with various land use will be analyzed.

Keywords: soil carbon stability,thermal analysis,soil fractionation