**Session Proposal**

# Session Title

Soil, Global Change, Food Security and Human Health

# Session Organizers

Chunwu Zhu, Institute of Soil Science, Chinese Academy of Sciences, cwzhu@issas.ac.cn, primary contact person

Yongguan Zhu, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China

Junguo Liu, North China University of Water Resources and Electric Power, Henan, China

Ziska, Lewis H., Environmental Health Sciences, Mailman School of Public Health, Columbia University

Peng Wang, Nanjing Agriculture University

Yu Wang, Institute of Soil Science, Chinese Academy of Sciences

# Session Description

This session explores the critical nexus among soil health, global change, food security, and human health. It will examine how climate change and anthropogenic pressures disrupt the cycling of nutrients, heavy metals, and emerging contaminants, showcasing innovative research that elucidates the fundamental mechanisms governing soil biogeochemical dynamics. Emphasis will be placed on developing integrative, sustainable nutrient management strategies that harmonize environmental, economic, and public health objectives. By uniting experts from soil science, ecology, agronomy, and public health, the session aims to establish a holistic framework underpinning innovative, policy-relevant solutions to safeguard food security and human health in our rapidly changing climate.

# Format

Oral presentations, panel discussions, workshops

# Proposed Speakers

**Ziska, Lewis H.**, He has worked primarily on documenting the impact of climate change and rising carbon dioxide levels on: Crop selection for CO2 responsiveness to improve production; Climate and agronomic pests, including chemical management; Climate, plant biology and public health impacts on food security with a focus on nutrition and pesticide use.

**Kees Jan van Groenigen**, Kees Jan is a biogeochemist passionate about understanding how plants and soils react to environmental changes and different management practices. His work explores carbon and nutrient cycles across diverse ecosystems, including grasslands, croplands, and temperate forests. He is particularly interested in the role of soil microbes in these cycles, which he studies using methods such as incubation experiments, isotopic tracers, and biomarker analyses. Kees Jan uses meta-analytic techniques to bring together findings from many studies, offering a big-picture view on issues related to food security, climate change impacts, and sustainable agricultural practices. Recently, he has focused on rice cropping systems, aiming to reduce their environmental footprint while boosting rice yields.

**Chunwu Zhu**, Institute of Soil Science, Chinese Academy of Sciences. The research primarily utilizes Free-Air CO₂ Enrichment (FACE), Open-Top Chambers (OTC), and large climate-controlled chambers as experimental platforms to study the responses and adaptations of cropland and wetland ecosystems to global change, particularly elevated CO₂, warming, and sea-level rise. The focus is on food security (yield, quality, and food safety) and soil nutrient cycling under global change.