**Session Proposal**

# Session Title

Soil Microbiomes – Importance For Climate Resilient Future, Degraded Lands Restoration And Plant Health Control

# Session Organizers

***Lead convener: Magdalena Frąc – Institute of Agrophysics, Polish Academy of Sciences, Lublin, Poland***

Co-conveners:

Alberto Acedo - Biome Makers Inc., USA

Ellen Kandeler - University of Hohenheim, Stuttgart, Germany

# Session Description

Humanity needs to live more sustainably on Earth as the world’s population grows at unprecedented rates, with a concomitant demand on natural resources. Modern agriculture and horticulture face multiple challenges; they need to be more productive to cope with rising food demand, and at the same time, become more efficient at mitigating climate change and preserving the environment and human health. The last report on regenerative agriculture in Europe stressed the need to restore soil health, increase carbon storage, and reverse biodiversity loss. Moreover, the report underscored the critical role of microbes in maintaining soil ecology and transforming mineral and organic soil compounds. According to the Soil Deal Mission in Horizon Europe, 60-70% of EU soils are threatened mainly due to unsustainable agricultural management practices. Moreover, up to 40% of food crops are lost yearly due to the attack and spread of plant pests. Additionally, increases in soil-borne plant pathogens pose a significant threat to the environment; in agricultural systems with already low biodiversity, this can lead to further declines in biodiversity and an increase in pathogen pressure. Therefore, healthy soils with high biodiversity of beneficial microbiomes are key to producing healthy food and are crucial to protecting crops against plant pests and diseases.

We strongly welcome all aspects of soil microbiomes, including benefits and risks, approaches, methods, and mechanisms, as well as the impacts of various factors on soil microbiomes.

The session was organised with the Soil Biology Commission 2.3 - IUSS Division 2 – Soil properties and processes.

**KEYWORDS:**

Soil microbiota

Soil-Plant-Microbe Interactions

Biodiversity loss reversal

Soil health

# Format

Oral presentations and poster presentations

# Proposed Speakers

Speaker 1, Joaana Falcao-Sales, Rijksuniversiteit Groningen (RUG), Netherlands, contributes as a leading expert in soil microbial ecology.

Speaker 2, Paolo Nannipieri, Universita Degli Studi Di Firenze (UNIFI), Italy, contributes a leading expert in soil biochemistry and the role of death and lysis of microbial and plant cells in the formation of soil organic matter driving soil microbiome

Speaker 3, Luz E de-Bashan, Centro de Investigaciones Biológicas del Noroeste S.C., La Paz, Mexico, contributes a leading expert in plant growth-promoting bacteria inoculation studies important for soil and plant health