Session Proposal

1. Session Title *(Limited to 30 words total)*

Restoring Soil Health for Sustainable Rice Cultivation: Pollution Remediation, Microbial Innovations, and Resilient Paddy Systems in East Asia

2. Session Organizers *(List the names, affiliations, and contact details of the session organizers. Indicate the primary contact person.)*

- **Name**: Cheng-Hsien Lin (primary contact person); **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: ch.lin@nchu.edu.tw
- **Name**: Hung-Yu Lai; **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: soil.lai@nchu.edu.tw
- **Name**: Pei-Tzu Kao; **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: peitzukao@nchu.edu.tw

3. Session Description *(A brief description that outlines the scope and relevance of the session)*

Description** (limited to **300** words total)**:

This session aims to bring together researchers, policymakers, and practitioners from East Asia to address the critical challenges and innovative solutions related to restoring soil health in rice cultivation systems. As rice remains a staple food for billions of people in the region, ensuring its sustainable production is essential for food security, climate resilience, and economic stability. However, widespread soil degradation

resulting from heavy metal contamination, nutrient depletion, soil carbon loss, and inefficient farming practices threatens long-term productivity and environmental health.

The session will focus on integrated approaches to pollution remediation, including bioremediation, soil amendments, and soil management techniques designed to mitigate heavy metal toxicity and rehabilitate degraded soils. Additionally, it will highlight microbial innovations—such as beneficial soil microorganisms, biofertilizers, and microbial inoculants—that enhance nutrient cycling, improve soil structure, and promote crop resilience.

Beyond remediation, the session will explore regenerative practices aimed at increasing soil carbon sequestration, enhancing ecosystem services, and mitigating greenhouse gas emissions from paddy fields. Emphasis will be placed on promoting sustainable intensification techniques, such as the System of Rice Intensification (SRI) and other nature-based solutions that optimize water use, restore soil fertility, and improve yield while reducing methane and nitrous oxide emissions.

Participants will discuss how these practices can be effectively tailored and scaled to meet the unique challenges faced in East Asia. This session aims to provide valuable insights for developing resilient and sustainable rice cultivation systems that contribute to “Soil and the Shared Future for Mankind.”.

4. Format *(Indicate whether the session will feature oral presentations, panel discussions, workshops, or any other interactive format)*

This session will include oral presentations, panel discussions, and workshops.

5. **Proposed Speakers** *(List potential speakers (if any) you intend to invite, including their affiliations and a brief description of their contributions to the session)*

- **Name**: Zueng-Sang Chen; **Affiliation**: Department of Agricultural Chemistry, National Taiwan University, Taiwan; **Email address**: soilchen@ntu.edu.tw; **Research Expertise**: Soil science, soil classification and survey, soil morphology and genesis, soil pollution and remediation, soil quality

- **Name**: Shan-Li Wang; **Affiliation**: Department of Agricultural Chemistry, National Taiwan University, Taiwan; **Email address**: wangsl@ntu.edu.tw; **Research Expertise**: Soil Chemistry, Soil Fertilizers, Soil Pollution and Soil Analysis

- **Name**: Zeng-Yei Hseu; **Affiliation**: Department of Agricultural Chemistry, National Taiwan University, Taiwan; **Email address**: zyhseu@ntu.edu.tw; **Research Expertise**: Soil and Ecology, Survey, Evaluation, and Remediation of soil Contamination

- **Name**: Chiu-Chung Young; **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: ccyoung@mail.nchu.edu.tw; **Research Expertise**: Soil biochemistry, Soil microbiology

- **Name**: Yu-Ting Liu; **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: yliu@nchu.edu.tw; **Research Expertise**: Soil chemistry, Soil biogeochemistry, Application of synchrotron-based techniques

- **Name**: Yu-Min Tzou; **Affiliation**: Department of Soil and Environmental Sciences,

National Chung Hsing University, Taiwan; **Email address**: ymtzou@dragon.nchu.edu.tw; **Research Expertise**: Environmental chemistry, Soil and groundwater remediation, Reuse and management of agricultural wastes, Environmental Chemistry Photo-catalytic chemistry

- **Name**: Hung-Yu Lai; **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: soil.lai@nchu.edu.tw; **Research Expertise**: Soil fertility, Soil survey, Plant nutrition, Soil science

- **Name**: Shih-Hao Jien; **Affiliation**: Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan; **Email address**: shjien@nchu.edu.tw; **Research Expertise**: Soil Physics, Geostatistics, Soil Survey and Classification, Sustainable Soil Management and Conservation Techniques

- **Name**: Kai-Wei Juang; **Affiliation**: Department of Agronomy, National Chung Hsing University, Taiwan; **Email address**: kwjuang@dragon.nchu.edu.tw; **Research Expertise**: Crop nutrition diagnosis, soil fertility management, soil pollution investigation, spatial data analysis

- **Name**: Horng-Yuh Guo; **Affiliation**: Taiwan Agricultural Research Institute, Ministry of Agriculture, Taiwan (Retired); **Email address**: hyguo@tari.gov.tw; **Research Expertise**: Soil Survey, Land Evaluation and Use Planning, Soil Fertility, Soil Amendment.

- **Name**: Chi-Ling Chen; **Affiliation**: Taiwan Agricultural Research Institute, Ministry of Agriculture, Taiwan; **Email address**: chiling@tari.gov.tw; **Research Expertise**: Biological Systems Analysis, Soil Chemistry, Agricultural Environmental Protection

- **Name**: Chien-Hui Syu; **Affiliation**: Taiwan Agricultural Research Institute,

Ministry of Agriculture, Taiwan; **Email address**: CHSyu@tari.gov.tw; **Research Expertise**: Soil Chemistry, Soil Survey, Rhizosphere Soil Chemistry, Soil Pollution, Instrumental Analysis

- **Name**: Rota Wagai; **Affiliation**: National Agriculture and Food Research Organization, Japan; **Email address**: rota@affrc.go.jp; **Research Expertise**: Biogeochemistry, Soil, Soil Analysis, Soil Chemistry, Carbon Sequestration, Environment, Soil Fertility, Ecology, Soil Science, Nutrient Cycling