



**HUN
REN**



International Conference on

Alternatives to Reduce Soil Degradation

May 19, 2026, Budapest, Hungary

Conference Schedule

May 19, 2026 08:30-17:00 Budapest, Hungary

8:30-9:00 Registration – upload presentations, put up posters

9:00-9:30 Conference opening (moderator: Ágota Horel)

9:00-9:05 Welcome – **Dr. Szabolcs Rózsa**, Dean, Budapest University of Technology and Economics, Faculty of Civil Engineering

9:05-9:10 Conference opening – **Dr. László Pásztor**, DSc, Director, HUN-REN ATK, Institute for Soil Sciences

9:10-9:30 Keynote speaker: **Prof. Tomáš Dostál** – Soil and water conservation, Czech Technical University, Czech Republic

Oral presentations: 12 minutes each +3 minutes for questions

9:30-10:30 Section 1: Recent developments in soil science and soil health (chair: Nándor Csikós),

9:30-10.30

- 1) **Tibor Tóth**, Szilárd Szabó, Tibor Novák, Szabolcs Czigány, Mihály Kocsis, András Makó, Bence Gallai, Mátyás Árvai, János Mészáros, Kitti Balog – Evaluation of four classification levels of Soil Taxonomy, Hungarian classification and WRB in terms of biomass production and their use for management zoning in a salt-affected alluvial plot (HUN-REN ATK TAKI, Hungary)

- 2) **Grant A Campbell** – Exploring the potential of underutilised plant species for improving soil health in Sub-Saharan Africa (University of Aberdeen, United Kingdom) - online
- 3) **Vladimir Ćirić**, Dragana Marinković – Soil data collection as initial steps for digital decision support systems in field production in Vojvodina (Novi Sad University, Serbia) - online
- 4) **Elemér László**, Dhikra Aouatef Benmansour, Péter Bodnár, Magdolna Szilágyi, László Palcsu – Strontium isotopes reveal terroir signatures in wine (HUN-REN ATOMKI, Hungary)

10:30-11:00 Coffee break

11:00-12:30 Section 2: Advances in soil biology (chair: Tünde Takács)

- 1) **Borbála Biró**, Zsolt Kotroczó – Plant-growth-promoting or -regulating rhizobacteria and analysis of soil-microbiom as potential monitoring tools of soil-health (MATE University, Hungary)
- 2) Csilla Almási, Viktória Orosz, Tímea Tóth, Ibolya Demeter, István Henzsel, Zsolt Bogdányi, Tamás András Szegi, Mostafa M. Mansour, **Marianna Makádi** - The role of sewage sludge compost in the phosphorus cycle (IAREF, Hungary)
- 3) **Katalin Bereczki**, Attila Benke, Endre Tóth, Melinda Megyes, Kristóf Korponai, Tibor Szili-Kovács, Gábor Illés, Károly Márialigeti – Evaluation of the structure and respiration activity of soil bacterial communities in three Hungarian forest stands (Sopron University, Hungary)
- 4) **Tibor József Novák**, Áron Béni, Evelin Juhász, Costa Gumisirya, Soma Horváth, Botond Buró, István Kocsis, Zsolt Sándor, Andrea B. Kovács – Spatial and temporal variations in the abundance and composition of the soil microbiome in healthy and degraded soils in Hungary based on PLFA markers (Debrecen University, Hungary)
- 5) **Viktor Szentpéteri**, Zoltán Mayer, Lívია László, Katalin Posta -- Host-Mycorrhiza compatibility results in varying stress resilience in tomato against drought and heat (MATE University, Hungary)
- 6) **Anandyawati Anandyawati**, Syaiful Anwar, Dwi Andreas Santosa, Zainal Mukhtar – Implications of soil fauna diversity and abundance on land use age gradients in horticultural agricultural systems for soil health (IPB University, Indonesia; Bengkulu University, Indonesia) - online

12:30-13:30 Lunch

13:30-14:30 Section 3: Conservative agriculture (chair: Eszter Tóth)

- 1) **Abdulrahman Maina Zubairu**, Anita Takács, Boglárka Anna Dálnoki, András Sebők, Caleb Melenya Ocansey, Miklós Gulyás – Characterization of controlled pyrolysis and traditional drum kiln biochar, and their agronomic evaluation (MATE University, Hungary; UNIMAID University, Nigeria)
- 2) **K Sanjith** – Reducing soil degradation in tea plantations through soil organic matter management: A 25-year study from the Nilgiris (UPASI, India)
- 3) **Lizana Flores G. Shelly**, La Scala Junior Newton – Loss of vegetation and CO₂e emissions as indicators of soil degradation in different biomes of Peru - São Paulo State University “Júlio Mesquita Filho” (UNESP University, Brazil)

- 4) **Sándor Horváth**, Gabriella Horváth, Gemma Gabriella Horváth, István László Papp, Gáborné Horváth – Soil ventilation - a new way to revitalization (WOODTECH PLC, Hungary)

14:30 - 15:30 Section 4: Monitoring and modeling soil processes (chair: Ágota Horel)

- 1) **Seyedehmehrmanzar Sohrab**, Brigitta Szabó, László Pásztor, András Makó, Gábor Szatmári – Bias correcting bulk density observations in the Hungarian Soil Information and Monitoring System (HUN-REN ATK TAKI, Hungary)
- 2) **Zsolt Kozma**, Tamás Ács, Bence Decsi, Máté György – Soil hydraulic aspects of a regional water balance modelling effort in the Tisa River Basin (BME University, Hungary)
- 3) **Ronald András Kolcsár**, Piroska Kassai, Péter Braun, Kinga Farkas-Iványi, János Mészáros, Michael Strauch, Cordula Wittekind, Mikołaj Piniewski, Christoph Schürz, Natalja Čerkasova, Brigitta Szabó – Stakeholder-driven multi-objective optimisation of water retention measures in a small Hungarian catchment (HUN-REN ATK TAKI, Hungary)
- 4) **Ignacio Domenech-Carretero**, Gema Guzmán, José Alfonso Gómez – Quantifying the effects of soil management on sediment dynamics using WaTEM/SEDEM in a Mediterranean small catchment under olive cultivation (IAS-CSIC, Spain)

15:30 - 16:00 Short presentations (Chair: Zsófia Bakacsi)

PICO presentations – 3-4 minutes each

- 1) **Ubaid Munawar Mir**, Shah Murzata Mushtaq, Khurshid Ahmad Sofi, Iqbal Jeelani, Mansha Manzoor – Soil quality indices for assessing the impact of forest soil health in urban forest division Srinagar
- 2) **Fredy F. Rivas Yupanqui**, Lizana Flores Giuliana S. – Critical phosphorus levels in maize grown in soils with contrasting remnant phosphorus and buffering capacity in the Mantaro Valley, Peru
- 3) **B Nivetha**, M Srinivash, P Murugesan, K Sanjith – Developing an organic foliar nutrition strategy to reduce soil degradation in tea cultivation in South India
- 4) **Amit Kesarwani**, Suraj Kumar – Enhancement of chlorophyll content as SPAD value and spike production in wheat crop under foliar feeding of urea and micro nutrients
- 5) **Fahad Amjad**, Muhammad Zain – Machine learning approaches for optimizing cover crop selection to enhance soil carbon sequestration and reduce degradation
- 6) **Muhilan Gangadaran**, Bagavathi Ammal Uma, Sankar Ramasamy, Dharumarajan Subramanian, Mummadi Thirvikram Reddy, Hemavathi Manivannan – Geospatial assessment and kriging-based mapping of soil fertility in agricultural lands of Karaikal district, Puducherry, India

16:00 – 16:55 Coffee break and Poster section

Poster presentations and a **free discussion** at the poster exhibition.

Posters:

- 1) **Jeancy Ntuka Luta**, Alasca Ekuya Lombolu, Paul Mafuka – Restorative approaches to degraded urban-rural land in the city-province of Kinshasa and its reuse for agricultural production (University of Kinshasa, Democratic Republic of Congo)
- 2) **Ariba Shahab** – Integrated mobile pyrogasification and biochar enhancement for low-carbon, resilient NET ZERO agriculture
- 3) **Hassan El-Ramady**, József Prokisch – Can nanotechnology be a solution against global water crisis? Towards promising approach for saving water under climate change
- 4) **Ashenafi Nigussie** – Effects of bio-slurry and inorganic nitrogen fertilizer rates on wheat yield components, yield, and soil properties (Ethiopian Institute of Agricultural Research based at Wondo Genet Agricultural Research, Ethiopia)
- 5) **Ali Arous**, Djilali Ouaar, Zakia Kaci, Thoraya Dahmene, Nouredine Kelkouli – Influence of livestock manure types (poultry and rabbit manure) on soil improvement for the preservation of natural resources in Algeria
- 6) **Raj Sharma**, Neha Kumari – Conservation agriculture and regenerative tillage practices: A pathway to soil health restoration and sustainable crop production
- 7) **Waqar Ahmed Pahore**, Muhammad Taqi Mirza, Amna Saleem, Arsalan Baigal, Kainat – A critical review on impacts of microplastic pollution on physico-chemical properties of soil
- 8) **Raghvendra Kumar Kushwaha**, Rishi Pratap – Soil physical, chemical, biological properties and recent soil health advances
- 9) **Manrique-Córdoba**, C. Álvarez-Alonso, E. Martínez-Sabater, Pérez-Murcia, M.D., S. Sánchez-Méndez, F.J. Andreu-Rodríguez, L. Orden, Sáez, J.A., Moral, R., Bustamante, M.A. – The agronomic application of compost and compost extract derived from agro-industrial wastes in lettuce cultivation
- 10) **João Pedro Coumendouros Scott** – Multi-isotopic tools to assess impact of vegetation changes on nitrogen and carbon cycles of Brazilian Highland soils
- 11) **Zafirah Zainal Abidin**, Mohd Hadi Akbar Basri, Muhammad Zhafirah, Noorsuhaila Abu Bakar – Effects of POME rates and NPK fertilizer combinations on growth, yield, shelf life, and soil chemical properties of cucumber (*Cucumis sativus* L.)
- 12) **Muhammad Zhafirah Bin Zamri**, Mohd Hadi Akbar Basri, Zafirah Zainal Abidin, Noorsuhaila Abu Bakar – Influence of palm oil mill effluent (POME) amendment on growth, physiology and soil chemical properties under *Mucuna bracteata* cultivation
- 13) **Lucia Toková**, Lenka Botyanszká, Peter Šurda, Natália Botková – Effect of polystyrene on radish (*Raphanus sativus* L. var. *Sativus*) growth in Chernozem
- 14) **Elhottová Dana**, Kajan Grodecká Lucie, Hobza Roman, Matějů Ldislava – Benefits and risks of human sludge composting as an alternative fertilizer to mitigate soil degradation
- 15) **Shabir Muhammad** – Indigenous arbuscular mycorrhizal fungi associated with zinc and copper in rice-cultivated soils of southern, central, and northern Khyber Pakhtunkhwa
- 16) **Sherwan Yassin Hammad**, Mahrokh Shafiei, Ledianë Durmishi, Gábor Milics – Hyperspectral site-specific weed detection as a strategy to mitigate herbicide-induced soil degradation
- 17) **Noorsuhaila Abu Bakar**, Muhammad Syahren Adzahar, Mohd Hadi Akbar Basri, Zafirah Zainal Abidin, Muhammad Zhafirah Zamri – Optimising grain corn productivity through nitrogen management strategies

- 18) **Dominika Lassu**, Márk Rékási, Orsolya Szécsy, Péter Ragályi, Mónika Molnár – Biochar from sunflower seed husk for the improvement of degraded sandy soil
- 19) **Anand Chaurasia**, Piyush Saxena, Shivam Kumar – Mycorrhizal-mediated soil quality improvement under conservation agriculture in the Indo-Gangetic Plains of India
- 20) **Veronika Gergócs-Winkler**, Norbert Flórián, Bettina Kelemen, Sándor Attila Pabar, Tünde Takács – Soil fauna-mediated effects of plant residues on soil health in agricultural systems
- 21) **Bouzar-Essaïdi Khaled** – Diversity and ecological role of soil arthropods in a cork oak (*Quercus suber*) forest ecosystem: A case study from the Tacheta-Zougagha state forest, Aïn-Defla, Northern Algeria
- 22) **Sara Gaida**, Fillipo Vaccari, Youssef Amor, Iteb Boughattas, Hanem Grissa, Chaima Alaya, Mohamed Banni, Edoardo Pugliesi, Sabrine Hattab – Short-term organic amendments differentially shape microbial communities in soil and earthworm guts under contrasting management
- 23) **Sándor Attila Pabar**, Zolt Kotroczó, Borbála Biró, Tünde Takács – Sensitivity of labile and stable carbon fractions to soil regeneration practices
- 24) **Mónika Márkus**, Balázs Madarász, Barnabás Kovács, Levente Kardos, Zolt Kotroczó – Organic under-vine mulching for terroir stability: Enhancing soil buffering capacity in Tokaj Vineyards
- 25) **Éva Péntzes**, Viktor Tóth, Richárd Császár, Márton Pólya – Results of a long-term trial with soil bacterial preparations (2016-2025)
- 26) **Daljit Singh Karam**, Arifin Abdu, Mohd Hakeem Mohd Ibrahim – Potential of silica-rich biochar as a soil amendment for regenerative agriculture
- 27) **Nafeesh Muhammad**, Deo Kumar, Krishnanand Yadav – Sustainable soil water management and conservation
- 28) **Dilkhush Meena** – Role of conservation agriculture on crop productivity under changing climate scenario
- 29) **Rania Amedjekouh**, Leila Soudani, Khadidja Attou, Meriem Bouzroua – Medicinal plant-based approach to phytoremediation for the sustainable conservation of heavy metal-contaminated agricultural soils: A case study of the Wilaya of Tiaret, Algeria
- 30) **Somsavath Thongphanit** – Regenerative Agriculture and its effect on soil physical characteristics
- 31) **Costa Gumisiriya**, Evelin Kármén Juhász, Rita Kremper, Áron Béni, Andrea Balla Kovács – Investigation of long-term effects of agrotechnical factors on the soil microbiome under winter wheat and corn
- 32) Enas Soliman, Medhat E. El-Seedy, Ola A. El-Gamal, Yasmin Abdullatif, **Mostafa M. Mansour** – Evaluation of biodegradable hydrogels for restoring degraded sandy soils
- 33) **Andres Felipe Rodriguez Vasquez**, Yolanda Rubiano, Andres Javier Peña – When climate leads the soil: projected shifts in soil moisture regimes and their impact on degradation in the Colombian Altillanura
- 34) **Malek Abidli**, István Waltner, Ágota Horel – Hydrology of urban surfaces: Water retention capacity of common mulch types
- 35) **Dragana Đorđević**, Sanja Sakan, János Mészáros, Zsófia Bakacsi, Eszter Tóth, Márton Dencső, Tibor Zsigmond, Sofija Miljković, Ágota Horel – Level of harmful elements in the grassland of central Serbia – Levač area (Rekovac)

- 36) **Cristina Álvarez-Alonso**, María Dolores Pérez-Murcia, Natalia Manrique-Córdoba, F. Javier Andreu, Enrique Agulló, Silvia Sánchez-Méndez, Aurelia Pérez-Murcia, Concepción Paredes, Raúl Moral, María Ángeles Bustamante Muñoz – A long-term study of the use of organic amendments from decentralised composting systems: effects on soil quality
- 37) **Tibor Zsigmond**, Andor Bódi, János Mészáros, Dragana Đorđević, Sanja Sakan, Ágota Horel – Analysis of soil moisture and vegetation dynamics in Serbian and Hungarian grasslands
- 38) **Andor Bódi**, Tibor Zsigmond, Ágota Horel – Soil moisture and surface temperature patterns across adjacent land use types
- 39) **Aiman Achemrk** – Spatial probabilities of soil salinity risk and recovery under hydroclimatic variability: A transition-based machine learning approach
- 40) **Mohd Hadi Akbar** – Sampling bias in soil CO₂ flux measurements in oil palm peat plantations
- 41) **Agim Leonard Chimaobi**, Ogu Christian – Evaluation of geotechnical properties, moisture retention characteristics and erodibility of selected degraded soils in Imo State Southeastern Nigeria
- 42) Unenmunkh Ganbold, Tibor Tóth, Viktória Labancz, András Makó, Hilda Hernádi, **Gyöngyi Barna** – Effect of an anionic surfactant on some soil physical properties
- 43) **Milena Mitova**, Eli Pavlova-Traykova – Erosion risk evaluation and assessment of the effectiveness of hydrotechnical facilities in mountainous watershed
- 44) **Monica Shree Chandramohan**, Peter Šurda – Hydrophilic biochar application to enhance soil hydraulic functioning and combat soil degradation
- 45) **Gyöngyi Barna**, Hanna Czinege, Mihály Pethe, Károly Hoffman, Tibor Novák, Tibor Tóth – The effect of trampling on some soil physical properties
- 46) **Mahrokh Shafiei**, Ledianë Durmishi, Sherwan Yassin Hammad – Monitoring soil moisture dynamics in the southeast of Hungary using Soil Moisture Active Passive (SMAP) satellite data and the standardized soil moisture index (2016–2023)
- 47) **Mariem Dahmouni**, Emna Abdennour, Mohamed Hachicha – Soil characterization and modeling of water and solute dynamics – Case of irrigated perimeters El Haouareb, Merguellil-Kairouan, Tunisia

16:55-17:00 Conference closing, final remarks