



**SUS-SOIL, TUBİTAK and CUKUROVA UNIVERSITY
WORKSHOP PROGRAM
SOIL QUALITY ASSESSMENT: PHYSICO-CHEMICAL,
MICROBIOLOGICAL AND GENOTOXICITY PERSPECTIVES**

This 5-day workshop is designed to comprehensively address soil quality, fertility, ecological health, and pollutant risk assessment through an integrated approach. Over five days (16.11.2026-20.11.2026), participants will gain hands-on experience and theoretical understanding of soil physico-chemical parameters, microbiological activities (Soil respiration, enzymes), and the genotoxic effects of environmental pollutants through combined laboratory and field protocols.

The workshop will be attended by researchers who commonly work in soil quality, soil microbial ecology, and soil toxicity/risk assessments. Within the workshop framework, the aim is to organise advanced, application-based soil analyses.

The workshop will be held at CU, Faculty of Agriculture, Department of Soil Science and Plant Nutrition, Adana, Turkey.

Notes

Since the workshop will be both practical and theoretical, only a limited number of participants will attend, based on the suggested analyses. Participants should have a soil science and/or microbiology background

The SUS-SOIL, TUBİTAK and Cukurova University will support the workshop.

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DAY 1: (16.11.2026): Soil Physico-Chemical Properties and Quality Indicators

Time	Event / Topic Title	Speaker / Responsible	Application & Analytical Details
09:00 – 09:30	Registration & Welcome	Organizing Committee	Participant registration, course materials and kit distribution.
09:30 – 10:00	Opening Remarks & Workshop Vision	University Rector, Vice Rector, Dean of Fac. Head of Department. & SUS-SOIL project leader Prof. Mosquera Losada Maria Rosa	Objectives of the workshop, importance of soil health testing, and program overview.
10:00 – 10:30	SUS-SOIL Project and Soil Analyses	Prof. Dr. İbrahim Ortaş & Prof. Dr. Mosquera Losada Maria Rosa	SUB-SOIL project aim and soil analyses needed.
10:30 – 12:30	Theoretical Session: Soil Physico-Chemical Dynamics	Prof. Dr. Abdul Malik & Prof.Dr. İbrahim Ortaş	Soil texture, structure, bulk density, pH, EC, Cation Exchange Capacity (CEC), and Organic Matter dynamics.
12:30 – 14:00	Lunch Break		
14:00 – 15:30	Hands-on Lab I: Physical Analyses	Prof. Dr. Abdul Malik, Dr. Feyzullah Öztürk	Soil texture determination via Pipette/Hydrometer method; Bulk density and calculations using undisturbed core samples.
15:30 – 16:00	Coffee Break	—	—
16:00 – 18:00	Hands-on Lab II: Chemical Analyses & CEC	Prof. Dr. İbrahim Ortaş Dr. Feyzullah Öztürk Dr. Veysi Akşahin Dr. Mehmet Işık Dr. Sadiye Toz İlknur Şahin	pH and EC measurements in saturation paste, Walkley-Black organic carbon assay, CEC and exchangeable cations (Ca, Mg, K, Na) via Ammonium Acetate method.

DAY 2: (17.11.2026): Heavy metals Analysis, Solvent Extraction of soils, and identification of Organic Compounds: Pesticides, Herbicides, Fungicides, Insecticides, etc., Antibiotics, and other compounds using GC-MS/HPLC

Time	Event / Topic Title	Speaker / Responsible	Application & Analytical Details
09:00 – 11:30	Carbon Fractions & Data Evaluation	Prof.Dr. Abdul Malik Prof. Dr. İbrahim Ortaş Dr. Veysi Akşahin	Physicochemical and Soil Carbon Fractions
11:30-12:30	Theoretical Session: Heavy metals and analytical part	Prof. Dr. Abdul Malik	Heavy metals and soil sample preparation. Digestion of soil samples for ICP-OES,
12:30 – 14:00	Lunch Break	—	—
14:00 – 18:00	Theoretical and Hands-on Lab II: Solvent extraction of soils and analysis of organic compounds	Prof. Dr. Ebru Kafkas	Extraction of soils using different organic solvents , GC-MS/HPLC for identification of organic compounds, pesticides, biocides, etc antibiotics, and other organic compounds, GC-MS/HPLC analysis of soil samples for organic compounds.

DAY 3: (18.11.2026): Heavy Metal Analysis, Isolation and Characterisation of microorganisms from soil

Time	Event / Topic Title	Speaker / Responsible	Application & Analytical Details
09:00 – 10:00	Hands-on Lab I: Heavy Metal Analysis	ICP-OES team Prof. Dr Abdul Malik, Prof. Dr. İbrahim Ortaş, Dr. Şahin Cenkseven Dr. Sadiye Toz, İlknur Şahin	Heavy Metal analysis by ICP-OES: Cd, Fe, Cu, Cr, Ni, Zn, Pb, Mo, etc
10.00- 11:00	Microbial diversity of soil: Methodological approach and trouble shooting	Prof. Dr. Elisabeth Grohmann, Berliner Hochschule for Teknik, Berlin, Germany	DNA Extraction from Soil: Methodology, Troubleshooting qPCR, Microbial Diversity in soil
11:00-12:30	Microbiology of Soil Theoretical	Prof. Dr. Abdul Malik	Isolation and characterisation of bacteria from soil
12:30 – 14:00	Lunch Break	—	—
14:00 – 16:30	Hands-on Lab II: Enzyme Activities (Dehydrogenase & Phosphatase etc)	Prof. Dr. Kemal Doğan Prof. Dr. Abdul Malik	Dehydrogenase activity assay (INT/TTC reduction) as a soil vitality marker and colorimetric determination of Acid/Alkaline Phosphatase activity.
16:30-17:00	Coffee Break	—	—
17:00 – 18:00	Data Integration & Interactive Session	All Instructors	

DAY 4: (19.11.2026): Soil Genotoxicity & Ecotoxicological Testing

Time	Event / Topic Title	Speaker / Responsible	Application & Analytical Details
09:00 – 10:30	Theoretical session: Unravelling Soil Complexity: From Soil Data to Scientific Insights	Srishti Srivastava	Statistical analysis of soil data, Principal Component Analysis (PCA)
10:30 – 12:30	Theoretical Session: Soil Pollutants & Principles of Genotoxicity testing system: Bacterial and Plant bioassays	Prof. Dr. Abdul Malik	Soil Pollutants, Various Short Term Toxicity Tests (STTs), Prokaryotic and Eukaryotic based systems
12:30 – 14:00	Lunch Break	—	—
14:00 – 16:00	Hands-on Lab I: Ames Salmonella Mutagenicity test, <i>Allium cepa</i> Root Tip Mitotic Index Assay, <i>Vigna radiata</i> seed germination assay	Prof. Dr. Abdul Malik	Demonstration of Ames Salmonella mutagenicity assay, Survivability of DNA repair defective mutants, Bacteriophage λ inactivation, <i>Allium cepa</i> chromosomal aberration and <i>Vigna radiata</i> seed germination assays.
16:00-16:30	Coffee Break	—	—
16:30 – 18:00	Discussion	Instructors	

DAY 5: (20.11.2026): Integrated Budgeting, Modeling, and Closing Ceremony

Time	Event / Topic Title	Speaker / Responsible	Application & Analytical Details
9:00 – 11:00	Hands on Lab: Nitrate, ammonium	Prof. Dr İbrahim Ortaş Dr. Mehmet Işık	Soil Nitrate and ammonium
11:00 – 12:30	Data comparisons with EU and International standards for soil Analysis	Prof. Dr. İbrahim Ortaş Prof. Dr. Abdul Malik	Data comparison with International standards
12:30 – 14:00	Lunch Break	—	—
14:00 – 15:00	General Discussion, Q&A, and Future Projections	All Participants	Sustainable soil management strategies, collaborative research frameworks, and regional/national project projections.
15:00 – 16:00	Certificate Ceremony & Closing	University Management & Committee	Presentation of certificates, closing remarks, and group photo.