

5th EDITION OF INTERNATIONAL CONFERENCE OBSIDIAN2025

PLANT PRODUCTIVITY AND FOOD SAFETY:

MICROBIOLOGY, SOIL SCIENCE, FOOD QUALITY AND AGRICULTURAL GENETICS

23-24 June 2025

THE EVENT HELD IN
CONJUNCTION WITH THE
ANNUAL MEETING OF
SUSTAIN COST ACTION 22144

SESSION I:
PLANT-MICROORGANISMS
INTERACTIONS IN AGRICULTURE
AND ECOSYSTEM
MANAGEMENT

SESSION II:
PLANT METABOLISM AND
SIGNALLING

SESSION III:
SOIL THREATS AND SECURITY

SESSION IV:
THE GLOBAL PROBLEM
OF SALINITY -
AN INTERDISCIPLINARY APPROACH

Keynote Lecturer
Prof. David B. Collinge

Department of Plant and
Environmental Sciences (PLEN),
Faculty of Science,
University of Copenhagen, Denmark

ON SITE ONLY

Nicolaus Copernicus University in Toruń
Faculty of Biological and Veterinary Sciences
Faculty of Earth Sciences and Spatial Management
Lwowska 1 Street, 87-100 Toruń

[www: https://soil-micro.umk.pl/pages/Konferencja_2025/](https://soil-micro.umk.pl/pages/Konferencja_2025/)

Sponsors



5th EDITION OF INTERNATIONAL CONFERENCE - OBSIDIAN2025

PLANT PRODUCTIVITY AND FOOD SAFETY:

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23-24 June 2025

7:15 - 12:00 **Registration**

7:45 - 8:15 **Ice-Breaker Session**

Session Chairs:

KATE NEGACZ

(Virije Universiteit Amsterdam, Netherlands)

LUÍSA CUSTÓDIO

(Centro de Ciências do Mar, Portugal)

8:15 - 8:30 **Opening the Conference**

8:30 - 9:00 **Keynote Lecturer's speech (Room I, Building B)**

PROF. DAVID B. COLLINGE

(University of Copenhagen, Denmark)

"Fungal endophytes for plant disease control"

CONFERENCE OBSIDIAN 2025

COST SUSTAIN ANNUAL MEETING

SESSION I *

(Room I, Building B)

Plant-Microorganisms Interactions in Agriculture and Ecosystem Management

Session Chairs:

IAN DODD

(Lancaster University, United Kingdom)

KATARZYNA HRYNKIEWICZ

(Nicolaus Copernicus University in Toruń, Poland)

WORK GROUP 3 *

(COST Action 22144)

(135, Buliding A)

Total value of saline ecosystems and landscapes

Coordinator:

ZENEPE DAFKU

(Agricultural University of Tirana, Albania)

(9:00 – 12:00)

9:00 – 9:25 **IAN DODD**

(Lancaster University, United Kingdom)

"Microbial Inoculants for Sustainable Agriculture in a
Changing Climate"

9:25 – 9:30 **Q&A Panel**

During this interactive session, we will explore valuation techniques for salt-affected lands with practical examples in selected countries. We will also conduct meta-analysis exercise showcasing economic potential of salt-affected land.

* - OBSIDIAN Conference Participants can select and take part in parallel events

SCHEDULE OBSIDIAN 23th JUNE 2025



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SHORT PRESENTATION PANEL

9:30 – 9:45 **Katarzyna Turnau**
(Jagiellonian University in Kraków, Poland)
"Mitigation of *Solidago canadensis* invasion using natural substances and selected endophytes"

9:45 – 10:00 **Magdalena Pacwa-Płociniczak**
(University of Silesia in Katowice, Poland)
"Barley rhizobiome during the drought experiment"

10:00 – 10:15 **Dalia A. Gaber Mahmoud**
(Erfurt University of Applied Sciences, Germany)
"Harnessing Dark Septate Endophytes to Enhance Plant Fitness in Harsh Environments"

10:15 -10:30 **Iñigo Zabalgogezcoa**
(Institute of Natural Resources and Agrobiology of Salamanca (IRNASA-CSIC), Spain)
"Habitat adaptation in a maritime grass (*Festuca rubra* subsp. *pruinosa*) and its fungal microbiome"

10:30 - 10:45 **Katarzyna Hryniewicz**
(Nicolaus Copernicus University in Toruń, Poland)
"From halophyte to microbial toolbox: Exploring the microbiome of *Salicornia europaea* for agricultural innovation"

10:45 - 11:00 **Discussion**

Working Group 3: Valuation of Salt-Affected Lands: Meta-Analysis and Economic Perspectives

Purpose and Objectives

The purpose of the meeting is to review valuation methods used in the literature, define a structure for a meta-analysis paper, and support Deliverable D3.4. The objectives include comparing methods, identifying evaluated ecosystem services, and establishing a standardized methodology.

Agenda Structure

- 09:00 – 09:15: Welcome and Introduction
- 09:15 – 09:30: Recap from Alberese meeting
- 09:30 – 10:30: Group discussion on ecosystem services in saline areas
- 10:30 – 10:45: Introduction Meta-Analysis - Valuation methods
- 10:45 – 11:30: Group discussion on valuation methods
- 11:30 – 11:45 Summary and Next Steps

Thematic Focus Areas

- Ecosystem Services in Salt-Affected Areas
- Valuation Methods & Indicators
- Meta-Analysis & Data Sources
- Economic Perspectives & Benefit Assessment

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SCHEDULE OBSIDIAN 23th JUNE 2025**POSTER SESSION**(3 min flash presentations)
(11:00-12:00)**Catarina Gomes Domingues**

(University of Lisbon, Portugal)

"Halotolerant fungi improve plant performance and lead to leaf morphological changes and differential gene expression under long-term salinity exposure in sea lavenders"**Mousavi Hesam**

(Inland Norway University of Applied Sciences, Norway)

"Nitrogen Enriched Organic fertilizer (NEO) elevates nitrification rates shortly after application but has no lasting effect on nitrification in agricultural soils"**Kamil Malik**

(University of Silesia in Katowice, Poland)

"Isolation and preliminary characterization of Extracellular Vesicles (EVs) from fungal pathogen *Exserohilum turcicum*: Implications for Maize Infection Mechanisms?"**Marcin Musiałowski**

(University of Warsaw, Poland)

"A novel two-step metabarcoding strategy for enhanced soil microbiome profiling and biodiversity assessment"**Marcin Borowicz**

(Intercollegiate Faculty of Biotechnology of the University of Gdańsk and Medical University of Gdańsk, Poland)

"Repurposed Phage Tails in Environmental Interactions: Tailocins of Soft Rot Pectobacteriaceae"**Expected Outputs**

- Agreed structure for the meta-analysis paper
- Comparative overview of valuation methods
- Identification of gaps and methodological challenges
- Contribution to Deliverable D3.4

Follow-Up Actions

- Drafting of the meta-analysis paper based on meeting outputs
- Assignment of responsibilities for sections
- Internal review and feedback
- Alignment with overall WG3 deliverable timeline



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Dariusz Jermala

(Lithuanian Research Centre for Agriculture and Forestry, Lithuania)

"Management of mineral nutrition to control the quality and safety of post-harvest leafy vegetables"

Wang Lin

(Ghent University, Belgium)

"Rhizosphere microbial responses to soil salinity induced by treated wastewater irrigation"

Aleksandra Goszcz

(University of Warsaw, Poland)

"Microbial Osmoprotectants as a Sustainable Strategy for Mitigating Salinity Stress in Plants and Soil Microbiota"

12:00 - 12:05 **Group Photo**

12:05 - 13:00 **Coffee Break**

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<p>SESSION II * (Room I, Building B)</p> <p>Plant Metabolism and Signalling</p> <p>Session Chairs: <u>YONGHUA LI-BEISSON</u> (Environment, Bioenergy, Microalgae and Plant, CEA Cadarache, France)</p> <p><u>AGNIESZKA ZIENKIEWICZ</u> (Centre for Interdisciplinary Technologies, Nicolaus Copernicus University in Toruń, Poland)</p>	<p>WORK GROUP 4 & 5 * (COST Action 22144) (135, Building A)</p> <p>Knowledge sharing and stakeholders' engagement & Policy framework for the salinisation management</p> <p>Coordinators: <u>HENRIK PER ARONSSON</u> (University of Gothenburg, Sweden)</p> <p><u>ÖZKAN ELMAZ</u> (Burdur Mehmet Akif Ersoy University, Türkiye)</p> <p>(13:00 – 16:00)</p>
<p>13:00 - 13:25 <u>YONGHUA LI-BEISSON</u> (CEA Cadarache, France) "Exploring algal lipid metabolism for food and feed"</p>	<p>During this interactive session, we will address topics related to both stakeholder empowerment and governance. This group will discuss effective ways to engage various stakeholders via workshops, sustainable saline agriculture value chain to support national and international agricultural policies and future research agenda at local and international scale.</p>
<p>13:25 - 13:30 Q&A Panel</p>	
<p>SHORT PRESENTATION PANEL</p>	
<p>13:30 - 13:45 Andrea Roman Mateo (Estacion Experimental del Zaidin, Spain) "Cloning and Functional Analysis of Protein S-Acyltransferases from Olive (<i>Olea europaea</i> cv. Picual) Pollen in a Yeast Heterologous System"</p>	
<p>13:45 - 14:00 Michał Szopiński (University of Silesia in Katowice, Poland) "Same Family, Different Strategies: How Two Related Plants Handle Heavy Metal Stress"</p>	

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14:00 - 14:15 **Emre Aksoy**
(Middle East Technical University, Türkiye)
"CPL1 Negatively Regulates Salinity Tolerance
Through the SOS Pathway in *Arabidopsis thaliana*"

14:15 - 14:30 **Mateusz Kwiatkowski**
(Nicolaus Copernicus University in Toruń, Poland)
"Cyclic nucleotides as universal second messengers in
plant signal transduction"

14:30 - 14:45 **Discussion**

POSTER SESSION
(3 min flash presentations)
(14:45-16:00)

Małgorzata Petelska
(Adam Mickiewicz University in Poznań, Poland)
"WHIRLY Proteins: A Potential Regulatory Link in
ABA-Mediated Stress Response"

Ewa Surówka
(The Franciszek Górski Institute of Plant Physiology
Polish Academy of Sciences, Poland)
"The role of selected metabolites and enzymes
related to tocopherol metabolism in response to
dehydration and rehydration in a glycophyte
Arabidopsis thaliana and a halophyte *Thellungiella
halophilla*"

Monika Lisinovičová
(Plant Science and Biodiversity Center, Slovak
Academy of Sciences, Slovakia)
"Betalains in grain amaranth seedlings under
different levels of salinity"

Marta Gabrysiak
(Nicolaus Copernicus University in Toruń, Poland)
"The effect of IAA-aspartate on the level of
phytohormones in pea (*Pisum sativum* L.) seedlings
during osmotic shock"

Purpose and Objectives

The meeting aims to explore how academic and management insights on salinised land use can be translated into practical actions by stakeholders. The objective is to drive impactful outcomes for markets and sustainable agricultural practices.

Agenda Structure

- 13:00–14:00: WG4 Session
- 13:00–13:15: Updates from Tasks 4.1, 4.2, and 4.3
- 13:15–13:30: Update on Task 4.4 with a focus on recent survey results
- 13:30–14:00: Group discussion on exploring how academic approaches to knowledge sharing can foster stakeholder engagement, and what barriers limit their real-world application
- 14:00–15:00: WG5 Session; Internal discussions on policy frameworks (agenda to be defined separately)
- 15:00–16:00: Joint WG4 & WG5 Session; stakeholder panel and discussion on how to transform academic ideas into real-world implementations

Thematic Focus Areas

- Transforming academic knowledge into stakeholder engagement and practical impact
- Enhancing interdisciplinary collaboration for saline agriculture development
- Policy and investment frameworks for sustainable innovation
- Behavioral and social dimensions of technology and product adoption



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Aušrinė Simonavičiūtė

(Vytautas Magnus University, Lithuania)

"Effect of light intensity and nutrient concentration on phenolic compound content and photosynthetic parameters in basil microgreens"

Expected Outputs

- Strengthening stakeholder dialogue for sustainable saline agriculture
- Enhancing communication between academia, industry, and policymakers
- Defining scientific needs for breeding salt-tolerant crops
- Promoting public acceptance of saline-resilient products
- Understanding investor priorities in agri-tech innovation

Follow-Up Actions

- Preparation of a perspective paper outlining a future research agenda at both local and international levels, based on survey insights (D4.4)
- Alignment with WG4 deliverable timelines
- Internal review and feedback cycle

18:00-19:30 Guided Walk Tour of Toruń

(19:30 -) Opening Evening - OBSIDIAN BBQ Dinner

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7:30 - 12:00 Registration

SESSION III *

(Room I, Building B)

Soil Threats and Security

Session Chairs:

PIOTR HULISZ

(Nicolaus Copernicus University in Toruń, Poland)

ÅSGEIR R. ALMÅS

(Norwegian University of Life Sciences, Norway)

WORK GROUP 2 *

(COST Action 22144)
(135, Building A)

Plant responses to salinity at the shoot and the root level

Coordinator:

IAN DODD

(Lancaster Environment Centre, Lancaster University, United Kingdom)

(8:30 – 11:30)

8:30 - 8:55 **ÅSGEIR R. ALMÅS**
(Norwegian University of Life Sciences, Norway)
"Soil Microbes and Salt Tolerance: Exploring Nature-Based Solutions for Climate Change Adaptation in Agriculture"

8:55 - 9:00 Q&A Panel

SHORT PRESENTATION PANEL

9:00 - 9:15 **Mehmet Ali Çullu**
(Harran University, Türkiye)
"Economic Agricultural Crop Diversification and Production in Salt-Affected Soils of Türkiye"

9:15- 9:30 **Sylvia Pindral**
(Institute of Soil Science and Plant Cultivation - State Research Institute, Puławy, Poland)
"The potential of agricultural soils to provide regulating soil-based ecosystem services"

During this interactive session, we will discuss future experimental work and genetic improvement programs in order to characterise and quantify root-microbial-soil interactions in saline soils, and their potential in terms of the optimal soil and water management of these lands. Plant abilities to distribute their roots in a heterogeneously saline landscape and interact with variable soil chemical and biological functions could provide agronomic solutions to the challenges of saline soils

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SCHEDULE OBSIDIAN 24th JUNE 2025



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9:30 - 9:45 **Hadi Pirasteh-Anosheh**
(Agricultural Research, Education and Extension Organization, Iran)
"Thriving Against the Odds: How Camelthorn Conquers Hypersaline Soils of the Great Salt Desert"

9:45 - 10:00 **Marcin Świtoniak**
(Nicolaus Copernicus University in Toruń, Poland)
"Black soils - can their definition be based on the WRB Reference Soil Groups?"

10:00 - 10:15 **Andrzej Greinert**
(University in Zielona Góra, Poland)
"The problem of the salinity of soils stabilized with sodium and potassium silicates given in a water glass form"

10:15 - 10:30 **Discussion**

POSTER SESSION
(3 min flash presentations)
(10:30 - 11:30)

Joanna Lemanowicz
(Bydgoszcz University of Science and Technology, Poland)
"Dynamics of phosphorus content and the activity of phosphatase in forest soil in the sustained nitrogen compounds emissions zone"

Agnieszka Klimkowicz-Pawlas
(Institute of Soil Science and Plant Cultivation - State Research Institute, Puławy, Poland)
"Biological indicators of soil health as a tool for assessing the impact of soil contamination"

Working Group 2: Plant responses to salinity at the shoot and the root level

Purpose and Objectives

The purpose of the meeting is to:

- enhance recruitment within WG2 to support Deliverables (D.2.1.2, 2.3, 2.4)
- update participants on new methods to phenotype salt tolerance and/or provide a platform for participants to share new results

Agenda Structure

- 08:30 – 08:45: Welcome and Introduction
- 08:45 – 10:00: Group discussion on ecosystem services in saline areas (15 minutes per topic with assigned groups rotating amongst topics)
- 10:00 – 11:00: Participants choose a thematic focus area to work on
- 11:00 – 11:15: Brief presentations from group discussion by facilitators
- 11:15 – 11:30: Summary and Next Steps

Thematic Focus Areas

- Genetic approaches to enhance salt tolerance
- Salt tolerance under multiple stresses
- Phenotyping salinity tolerance
- Phenotyping the microbiome to enhance salt tolerance
- Experiments *versus* real-world salt stress



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Pınar Gültekin

(Düzce University, Türkiye)

"Identifying Key Stakeholders for Conserving Salt-affected Lands in Turkey"

Michał Gliński

(Adam Mickiewicz University, Poznań, Poland)

„Application of Bimetallic Coordination Cages for the Extraction of Antibiotic Residues from Agricultural Waters"

Aleksandra Loba

(Nicolaus Copernicus University in Toruń, Poland)

"Luvisols disappearance in the loess landscape – a case study from Trzebnica Hills (SW, Poland)"

Expected Outputs

- Agreed structure for Deliverable 2.1.2 paper on traits that interact to influence salt tolerance
- Agreed structure for Deliverable 2.3 paper on breeding strategies for salt stress tolerance
- Agreed structure for Deliverable 2.4 paper on soil biological and chemical functions under heterogeneous salinity

11:30 - 12:30 **Coffee Break**

24th JUNE 2025

SCHEDULE OBSIDIAN



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<p>SESSION IV * (Room I, Building B)</p> <p>The Global Problem of Salinity - An Interdisciplinary Approach</p> <p>Session Chairs: <u>KATE NEGACZ</u> (Vrije Universiteit Amsterdam, Netherlands)</p> <p><u>KATARZYNA HRYNKIEWICZ</u> (Nicolaus Copernicus University in Toruń, Poland)</p>	<p>WORK GROUP 1 * (COST Action 22144) (135, Building A)</p> <p>Soil and water salinity: physical and biochemical characteristics at different scales</p> <p>Coordinator: <u>VESNA TUNGUZ</u> (University of East Sarajevo, Bosnia and Herzegovina)</p> <p>(12:30 - 15:30)</p>
<p>12:30 - 12:55 <u>KATE NEGACZ</u> (Vrije Universiteit Amsterdam, Netherlands) "Counting the Costs: Economic and Social Dimensions of Rising Salinity in Agriculture"</p>	<p>During this interactive session, we will discuss the most promising technologies to monitor soil and water salinity and how they can be featured on open-access platforms. The group will also formulate preliminary guidelines on soil mapping to capture heterogeneity, sustainable agricultural practices and identifying gaps and new innovations/technologies.</p>
<p>12:55 - 13:00 Q&A Panel</p>	
<p>SHORT PRESENTATION PANEL</p>	
<p>13:00 - 13:15 Wiesław Kaca (Jan Kochanowski University, Kielce, Poland) "Removal of selected metal ions from soils by newly isolated <i>Viridibacillus arvi</i> strain U1 active on biocementation on solid support of cationised polyvinyl alcohol (PVA) polymers"</p>	
<p>13:15 - 13:30 Nadia Bazihizina (The University of Florence, Italy) "Solving the root dilemma in saline soils: evaluating root responses under combined salinity stress and P deficiency"</p>	

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13:30 - 13:45 **Oueslati Samia**
(Centre of Biotechnology of Borj Cedria, Tunisia)
"Phenolic acids: Promising seed priming agent for mitigating salt stress in *Raphanus sativus*"

13:45 - 14:00 **Agnieszka Piernik**
(Nicolaus Copernicus University in Toruń, Poland)
"Saline habitats: a conservation concern or an environmental problem?"

14:00 - 14:15 **Ali Volkan Bilgili**
(Harran University, Türkiye)
"Modeling and Mapping Soil Salinity in the Harran Plain Using Geostatistics, Spectral Data, and Machine Learning Techniques"

14:15 - 14:30 **Discussion**

POSTER SESSION
(3 min. flash presentation)
(14:30 - 15:20)

Rossella Mastroberardino
(University of Bologna, Italy)
"Differential responses of *Camelina sativa* accessions to soil salinity"

Carlotta Pagli
(Universidad de Almeria, Spain)
"Cyanobacteria from biocrust as a promising biostimulant for enhancing plant growth and resilience to salinity stress"

Turkyilmaz Dogan
(Ataturk University, Türkiye)
"Effect of Forage Plants Cultivated in Saline Soils on Yield Parameters in Sheep"

Manal Eid
(Suez Canal University, Egypt)
"Stress Tolerance in Plant: Opportunities and Challenges for Water Scarce"

Working Group 1: Improving understanding of salinization dynamics across temporal and spatial scales in land and coastal areas

Purpose and Objectives

The meeting aims to evaluate current soil mapping technologies and develop new guidelines for assessing soil salinity and related properties at scales that are physiologically relevant for plant growth.

Agenda Structure

- 12:30 – 12:45: Welcome and Introduction
- 12:45 – 13:45: Group discussion on ecosystem services in saline areas (15 minutes per topic with assigned groups rotating amongst topics – named facilitator @ each table)
- 13:45 – 14:45: Brief presentations from group discussion by facilitators
- 14:45 – 15:15: Participants choose a thematic focus area to work on
- 15:15 – 15:30: Summary and Next Steps

Thematic Focus Areas

- Review current soil salinity monitoring methods to identify gaps and future tech needs.
- Determine relevant spatio-temporal scales for mapping salinity and related variables.
- Analyze co-occurring stresses in saline soils through literature and collaborative inputs.
- Share findings with WG2-3 to support database development and cross-WG knowledge exchange.



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<p>Ahmad Rajabi Dehnavi (Nicolaus Copernicus University in Torun, Poland) “Ecophysiological Responses of the Halophyte <i>Puccinellia distans</i> to Salinity Stress: Mechanisms of Tolerance and Ecosystem Restoration Applications”</p>	<p>Expected Outputs</p> <ul style="list-style-type: none">• Review current soil salinity monitoring methods to identify gaps and future tech needs.• Determine relevant spatio-temporal scales for mapping salinity and related variables.• Analyze co-occurring stresses in saline soils through literature and collaborative inputs.• Share findings with WG2-3 to support database development and cross-WG knowledge exchange. <p>Follow-Up Actions</p> <ul style="list-style-type: none">• Assignment of responsibilities for sections• Internal review and feedback• Alignment with overall WG1 deliverable timeline
<p>Kristine Petrosyan (Nicolaus Copernicus University in Torun, Poland) “SaltyBEATS: Innovative microbiome solutions for biodiversity restoration and sustainable agriculture in salt-affected lands</p>	
<p>15:20 - 15:40 Sponsorship presentations</p>	
<p>15:40 - 16:00 Closing Ceremony and Awarding</p>	
<p>16:00 - 18:00 Management Committee Meeting (COST Action 22144)</p>	



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OBSIDIAN 2025 Laboratory-workshop "Plant-microbial interactions in saline areas"

Place: Department of Microbiology, Faculty of Biological and Veterinary Sciences, Nicolaus Copernicus University

Lecturers: Deja-Sikora Edyta (Coordinator of the Workshop), Furtado Bliss U., Kalwasińska Agnieszka, Thiem Dominika, Szymańska Sonia, Szydło Jagoda, Marangi Matteo

Suggested trainees: students (max. 10 participants)

Task: Isolation, characterisation of microorganisms associated with halophytes. Effect of salinity on microbial diversity and metabolic activity.

REGISTRATION FORM

25 JUNE 2025

OBSIDIAN 2025 Field-workshop „Plant-soil relationships in saline areas"

Place: Inowrocław, the saline area around the soda ash plant (40km from Toruń)

Lecturers: Piotr Hulisz, Agnieszka Piernik

Suggested trainees: scientists, PhD Students (max. 50 participants)

Task: Identification of halophytes, field study of soil properties and assessment of the influence of local environmental conditions on plant biodiversity.

REGISTRATION AVAILABLE THROUGH OBSIDIAN CONFERENCE 2025 **REGISTRATION FORM**

PARTICIPATION ON SITE ONLY

Conference Fee

350 zł Researchers

200 zł Doctoral Students / Students

Please contact: conferenceobsidian@gmail.com if you have any questions!

Yours Sincerely

SUSTAIN COST Action 22144 Members

No Registration Fee

On behalf of the Conference Organising Committee,

Katarzyna Hryniewicz

WORKSHOP SCHEDULE OBSIDIAN