



Food and Agriculture
Organization of the
United Nations

AGENDA

Salt-affected soils: threats and potentials

Joint meeting of
INSAS and SUSTAIN

| Valencia, Spain
| May 27-31, 2024



Funded by
the European Union



EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY



Sustainable use of salt-affected lands



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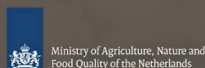
International Union of Soil Sciences

SEDER

Soil carbon and degradation research group



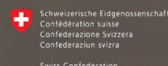
GLOBAL SOIL
PARTNERSHIP



Ministry of Agriculture, Nature and
Food Quality of the Netherlands



Australian Government
Department of Agriculture,
Water and the Environment



Schweizerische Eidgenossenschaft
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Departament de
Geografia

Joint meeting of the International network of salt-affected soils (INSAS) and the COST Action on the sustainable use of salt-affected lands (SUSTAIN)

Valencia, Spain, 27-31 May 2024

Registration links for online participants:

May 27 (workshop) — https://fao.zoom.us/webinar/register/WN_a8fRsJYmSyyIYwLmAn0tRQ

May 28 (INSAS) — <https://fao.zoom.us/meeting/register/tJ0qdOysrTMrHNS9LSgPWQZu6EVWbEBAbbjT>

May 28 (SUSTAIN) — <https://vu-live.zoom.us/j/92699007805?pwd=Z1RCY3NKSGV3WjNzT0J0eE83MFJ1UT09>

May 29 (trainings) — <https://fao.zoom.us/meeting/register/tJ0qdOysrTMrHNS9LSgPWQZu6EVWbEBAbbjT>

Background. Among the diversity of the world's soils, salt-affected soils are a group that have a distinct specificity. Many are primary or naturally saline soils, which range from mangroves, marshes and coastal wetlands to inland salt flats and ancient sea beds, all of which are home to unique ecosystems that are adapted to extreme salinity conditions. Their resilience makes a significant contribution to global biodiversity and offers a fascinating insight into life's capacity to adapt. Studying these environments not only enriches our understanding of nature, but also promises to unlock the keys to adapt to future scenarios that are essential for maintaining crops in saline conditions and ensuring food security for the world's growing population.

Yet, as the world's population grows exponentially and living standards improve, the pressure to convert once marginal land into fertile land is intensifying. This phenomenon is particularly pronounced in semi-arid and arid regions, which rely heavily on irrigation for agricultural production and are scarce in fresh water resources. As a result, secondary salinization – the gradual and human induced accumulation of salts in the soil – is a serious obstacle to agricultural production. The situation is set to worsen with the increasing effects of global warming and climate change, forcing populations to abandon degraded areas and triggering migration.

To address these issues and foster stronger connections between science, policy, and farmers, the International Network of Salt-Affected Soils (INSAS) will convene its third meeting in Valencia, Spain, jointly with SUSTAIN COST Action, EU-funded project on the management of salt-affected soils.

The meeting will be hosted by the Universitat de València, Estudi General and will have both in-person and remote participation via Zoom.

Venue: [Facultat de Geografia i Història](#), Universitat de València, Av. de Blasco Ibáñez, 28, València, Spain

Day	Events
May 27	International workshop on salt-affected soils: SALT-AFFECTED SOILS : THREATS AND POTENTIALS
May 28	Technical sessions of INSAS and SUSTAIN
May 29	Trainings on salt-affected soils and halophytes
May 30-31	Field trips to salt-affected areas: Halophytes, salt-affected soils and saline water management

May 27

Venue: University of Valencia, Faculty of Geography, Valencia, Spain

JOAN FUSTER room

Online: https://fao.zoom.us/webinar/register/WN_a8fRsJYmSyyIYwLmAn0tRQ

8:00 – 9:00

Registration

9:00 – 09:20

WELCOME AND OPENING REMARKS

Vice-Principal for Internationalisation and Multilingualism, Universitat de València, Estudi General, Spain

Dean of the Faculty of Geography and History, Universitat de València, Estudi General, Spain

Head of the Department of Geography, Universitat de València, Estudi General, Spain

Chair of the International network of salt-affected soils (INSAS)

Chair of the COST Action on the sustainable use of salt-affected lands (SUSTAIN)

Representative of the Organizing Committee, Head of the Soil Erosion and Degradation Research Team

Session 1: Keynote presentations

Moderator: Mr Artemi Cerda, Universitat de València, Estudi General

9:20 – 11:00

KEYNOTE PRESENTATIONS

Introducing the COST Actions

Ms Carmencita Malimban, Senior Administrative Officer, COST Association, Belgium

Sustainable use of salt-affected lands: community of research and practice

Ms Katarzyna Negacz, COST Action on the sustainable use of salt-affected lands (SUSTAIN), Chair, Kingdom of the Netherlands

International network of salt-affected soils (INSAS) and its main areas of work

Mr Jorge Battle-Sales, International network of salt-affected soils (INSAS), Chair, Spain

Living with salinity in South Asia: comparisons between three projects

Mr Edward Barrett-Lennard, Murdoch University, Australia

From Niche to Global: Unlocking the Scaling Potential of Saline Agriculture

Mr Pim van Tongeren, Vrije Universiteit Amsterdam, Kingdom of the Netherlands

Plantation and utilization of halophytes with saline water irrigation in the Thar desert of Pakistan online

Ms Bilquees Gul, Institute of Sustainable Halophyte Utilization, University of Karachi Pakistan

Assessing soil potassium and phosphorus dynamics in potato and maize under drip irrigation

Mr Meisam Rezaei, Soil and Water Research Institute (SWRI), Agricultural Research, Education, Extension Organization (AREEO), Karaj, Iran

11:00 – 11:30

Coffee break

May 27

Venue: University of Valencia, Faculty of Geography, Valencia, Spain

Session 2: Oral presentations

Moderator: Mr Jorge Batlle-Sales, INSAS Chair

11:30 – 13:00

Crop modelling to assess the performance of quinoa under saline conditions in various management scenarios

Ms Diana Estrella, Flanders Research Institute for Agriculture, Fisheries and Food (ILVO), Belgium

Leaching or reclamation, which one matters? online

Mr Yousef Hasheminejad, Soil and water research department, Agricultural and Natural Resources Research and Education Center, Agricultural Research, Education and Extension Organization, Mashhad, Iran

Saving water with Chameleon soil moisture sensor in the Mekong Delta online

Mr Dinh An Giang Cao, Can Tho University, Viet Nam

Policy and legal frameworks for sustainable management of salt-affected soils online

Mr Pradip Dey, ICAR-ATARI, Kolkata, India

Effect of halophyte-based management in physiological, biochemical and metabolomic responses of tomato plants under moderately saline conditions

Mr Jose Antonio Hernandez, CEBAS-CSIC, Spain

Considering spatial heterogeneity of drip irrigated salinity in soil monitoring online

Ms Olena Drozd, Estación Experimental de Aula Dei, EEAD-CSIC, España / Ukraine

13:00 – 14:30

Lunch

Session 2: Oral presentations (cont'd)

Moderator: Ms Katarzyna Negacz, INSAS Co-Chair, SUSTAIN Chair

14:30– 16:00

Mapping environmental vulnerability to soil salinization in a semi-arid river basin in Brazil online

Mr Flavio Rodrigues do Nascimento, Federal University of Ceara, Brazil

Expanding food options through *Tetragonia tetragonioides*: A solution to soil salinization challenges

Ms Giulia Mozzo, Department of Agriculture, Food, Environment and Forestry (DAGRI), University of Florence, Italy

Projects, policies and actions in the sustainable use of saline soils in Turkey

Mr Turgay Dindaroglu, Karadeniz Technical University, Türkiye

Salinity shapes *Salicornia europaea* L. functional traits

Ms Agnieszka Piernik, Nicolaus Copernicus University in Toruń, Poland

May 27

Venue: University of Valencia, Faculty of Geography, Valencia, Spain

Session 2: Oral presentations (cont'd)

14:30– 16:00

Hormonal responses to combined phosphorus deficiency and salinity in soybean (*Glycine max* L. Merr.)

Mr Francisco Pérez Alfocea, CEBAS-CSIC, Spain

Insights on how the halophyte *Tetragonia tetragonioides* deals with saline environments

Ms Giulia Atzori, National Research Council of Italy - Institute of Sustainable Plant Protection (CNR-IPSP), Italy

16:00 – 16:30

Coffee break

16:30 – 18:00

Session 3: Oral poster session

Moderator: Maria Konyushkova, FAO/GSP

18:00 – 18:15

GROUP PHOTO

Oral poster session

(in alphabetic order)

Impacts of cow dung and beach sand amendments on soil moisture content and salinity, and growth rate of "oat grass" in a maritime Tunisian oasis

Mr Brahim Askri, National Engineering School of Gabes, Tunisia

Seed pre-treatment with bioregulator thiourea improves salinity tolerance in wheat at booting stage

Ms Azka Saleem, Univeristy of Agriculture Faisalabad

Fertilizer prescriptions for Brinjal (*Solanum Melangena*) in coastal Karaikal region

Ms Uma Bagavathi Ammal, Pandit Jawaharlal Nehru College of Agriculture and Research Institute

Impact of environmental and climatic changes on a Protected Salt Plain in Danube valley, Hungary

Ms Zsófia Bakacsi, HUN-REN ATK Institute for Soil Sciences

Tillage and amendment management impact on saline soil properties and crop yields in Mediterranean organic farm in Croatia

Mr Igor Bogunović, University of Zagreb Faculty of Agriculture

Improvement of crop production on the rice-based cropping system under conditions of drought and seawater intrusion by integrated rice-upland crops rotation and soil management

Mr Khoi Chau, Can Tho University

Utilization of organic fertilizers for sustainable management of salt-affected soils: a synthesis of studies and trends

Ms Nuray Çiçek

Soil salinization mechanism in the Sile- Elgo interfluve of the Southern Main Ethiopian Rift Valley

Ms Tizita Elsho

Endophytic diversity of *Salicornia europaea*: a key to salinity management

Ms Bliss Furtado

The effect of salt stress on the germination of maize (*Zea mays* L.) seeds and photosynthetic pigments

Mr Bekim Gashi, University of Prishtina

Prediction of changes in soil salinity level and groundwater table due to install a drainage system, using Python programming language and drainage system modeling

Mr Karim Ghorbani, Ministry of agriculture-jahad

Combination of biostimulants application with soil amendments enhances quinoa tolerance to high salinity stress under greenhouse conditions

Mr Cherki Ghoulam, Cadi Ayyad University, Marrakech

Exploring the interactive effects of salt and UV-B on *Chenopodium quinoa* Willd. growth and physiology

Ms Giorgia Guardigli, Department of Biology, University of Florence

Oral poster session (cont'd)

Harnessing plant growth-promoting Rhizobacteria, *Bacillus subtilis* and *b. aryabhatai* to combat salt stress in rice: a study on the regulation of antioxidant defense, ion homeostasis, and photosynthetic parameters

Mr Mirza Hasanuzzaman, Sher-e-Bangla Agricultural University

Sustaining crop productivity and soil health in soybean-mustard cropping with soil amendments under sodic soils of western India

Ms Rashmi I., ICAR-IISWC, RC, Kota

Reclamation of salt affected soil by municipal solid waste compost

Ms Taymaa Ibraheem, al-Baath University

Does the recipe of nutrient solution for alkalinity experiments in hydroponics need modifications?

Mr Muhammad Imran

Assessment of soil salinity and its spatial distribution in Magozi rice Irrigation Scheme, Iringa, Tanzania

Mr Daniel Porkalpo Isdory, Sokoine University of Agriculture

Monitoring seasonal dynamic of soil salinity in pistachio orchard field in Central Iran

Ms Leila Jahanbazi, AARHUS UNIVERSITY

The spatial variability of different levels of electrical conductivity (EC) in croplands remains poorly captured by various remote sensing-based indices

Mr Fuat Kaya, Department of Soil Science and Plant Nutrition, Faculty of Agriculture, Isparta University of Applied Sciences, Isparta, Türkiye

Alleviation of salt-affected soils using plant growth promoting rhizobacteria (pgpr): agro-ecological perspectives and crop responses

Mr Prasada Rao Kongala, Sam Higginbottom University of Agriculture, Technology and Sciences (Formerly Allahabad Agriculture Institute)

Haloxerophytization of the vegetation cover of the lower reaches of the Amu Darya in modern conditions

Mr Nizamatdin Mamutov, Karakalpak state university

Preliminary outputs from meetings with Portuguese institutions about policies related to soil salinisation

Mr Vítor João Pereira Domingues Martinho, Agricultural School (ESAV) and CERNAS-IPV Research Centre, Polytechnic Institute of Viseu (IPV), 3504-510 Viseu, Portugal

Estimation of saturated soil paste electrical conductivity and soluble salts from extract of different soil to water (1:1, 1:2.5, and 1:5) ratios in non-gypsiferous soils

Mr Mostafa Marzi, Soil and Water Research Institute (SWRI), Agricultural Research, Education, Extension Organization (AREEO), Karaj, Iran

Oral poster session (cont'd)

Farmers coping strategies to manage salt affected soils for sustainable rice farming in the face of climate change in Tanzania

Ms Primitiva Andrea Mboyerwa Mboyerwa, Sokoine University of Agriculture

Impact of different salinity levels on the early growth of wild rice (*Oryza Coarctata*.l) and to improve soil health

Ms Fozia Naz Memon, Soil and Environment Research Institute

Screening new genetic resources of grain amaranth (*Amaranthus* spp.) for salinity tolerance

Ms Veronika Mistríková, Institute of Plant Genetics and Biotechnology, Plant Science and Biodiversity Center, Slovak Academy of Sciences, Nitra, Slovakia

Identification of adaptive physiological mechanisms in saline condition: *Tetragonia tetragonioides* and *Chenopodium quinoa*

Ms Giulia Mozzo, Department of Agriculture, Food, Environment and Forestry (DAGRI), University of Florence

Mobilising carbon markets to scale saline agriculture

Mr Yanik Nyberg, Seawater Solutions / NARA Climate

Investigating the impact of saline irrigation on *Tetragonia tetragonioides* growth and productivity under different pedoclimatic conditions

Mr Michele Petrillo, University of Florence

Simulating soil salinity and determining proper irrigation scheduling in pistachio orchards of Qazvin (Iran)

Mr Meisam Rezaei, Soil and Water Research Institute

Effect of the application of a compost of rice straw and sewage sludge on the salinity of a clay loam soil dedicated to citrus cultivation

Mr Luis Roca-Pérez

Comparative effect of nitrogenous fertilizers on mobilization and absorption of phosphorus by wheat in saline-sodic soil

Mr Muhammad Sabir, Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad, Pakistan

Regeneration and utilization of salt-affected soils using salt-tolerant grass species

Mr Muhammad Saqib, Institute of Soil and Environmental Sciences, University of Agriculture Faisalabad, Pakistan

Mapping and monitoring of soil salinization by remote sensing, case study: Sabkha Tazra and its surroundings, Morocco

Ms Najat Sarkouh, Mediterranean youth for water network

Salinity in African countries: from local challenges to global solutions

Ms Janina Smaoui, Vrije Universiteit Amsterdam

Oral poster session (cont'd)

Sodium ions have the strongest negative impact on the chlorophyll synthesis and greening of wheat seedlings

Mr Katalin Solymosi, ELTE Eötvös Loránd University

Characterization of the mangrove swamp rice soils along the great scarries river in sierra leone using principal component analysis (2018)

Mr Foday Sumah, Sierra Leone Agricultural Research Institute

Saline agriculture, climate funds and impact investors

Mr Pier Vellinga, Vrije Universiteit Amsterdam, Kingdom of the Netherlands

Integrated soil and water management under saline conditions in Ukraine

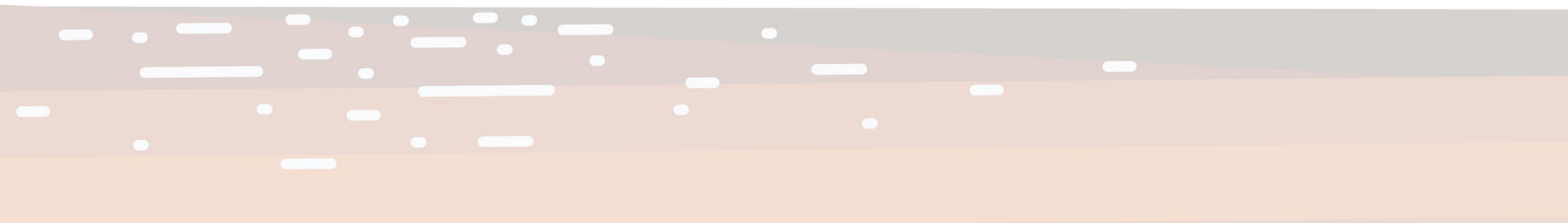
Ms Ludmila Vorotyntseva, National Scientific Center «Institute for Soil Science and Agrochemistry Research named after O.N. Sokolovsky», Ukraine

The potential of selected wild plant species as crops on poor soil

Ms Katja Witzel, Leibniz Institute of Vegetable and Ornamental Crops, Germany

Salt-affected soils in Türkiye

Mr Tugrul Yakupoglu, Yozgat Bozok University



May 28

Venue: University of Valencia, Faculty of Geography, Valencia, Spain

Room TBC

Online: <https://fao.zoom.us/meeting/register/tJ0qdOysrTMrHNS9LSgPWQZu6EVWbEBAbjT>

Technical session of INSAS

Moderator: Mr Jorge Batlle-Sales, INSAS Chair

9:00 – 9:30	Report on the INSAS work in 2023-2024	Maria Konyushkova, GSP Secretariat
9:30 – 10:00	Regional assessment on status and management of Asia	Mr Sanjay Arora, ICAR-Central Soil Salinity Research Institute
10:00 – 10:30	Regional assessment on status and management of Europe and Eurasia	Ms Katarzyna Negacz, Vrije Universiteit, the Netherlands, INSAS Vice-Chair
10:30 – 11:00	Regional assessment on status and management of Near East and North Africa	Mr Ahmad Majar, General Commission for Scientific Agricultural Research, Syria
11:00 – 11:30	Coffee break	
11:30 – 12:00	Regional assessment on status and management of North America	Ms Maria Konyushkova, GSP Secretariat
12:00 – 12:30	Regional assessment on status and management of the Pacific	Mr Edward G. Barrett-Lennard, Department of Primary Industry and Regional Development, South Perth WA, Australia
12:30 – 13:00	Regional assessment on status and management of Sub-Saharan Africa <i>online</i>	Ms Mary Idowu, Obafemi Awolowo University, Ile-Ife, Nigeria
13:00 – 13:30	Regional assessment on status and management of Latin America and the Caribbean <i>online</i>	Mr Raul Lavado, University of Buenos Aires and CONICET, Argentina
13:30 – 15:00	Lunch	
15:00 – 17:30	Developing work plans adapted to the regional context	all
17:30 – 18:00	Closing remarks	INSAS Chair
20:00	Gala dinner	

May 28

Venue: University of Valencia, Faculty of Geography, Valencia, Spain

JOAN FUSTER room

Online: <https://vu-live.zoom.us/j/92699007805?pwd=Z1RCY3NKSGV3WjNZT0J0eE83MFJ1UT09>

Technical session of COST SUSTAIN

Moderators: Katarzyna Negacz and Nadia Bazihizina

9:00 – 9:30	Registration	Mr Pim van Tongeren, SUSTAIN Project Manager
9:30 – 10:00	Welcome and report on main SUSTAIN activities in 2023-2024	Ms Katarzyna Negacz and Ms Nadia Bazihizina
10:00 – 12:00	SUSTAIN WG1 and WG3 Meeting	Mr Michail Orfanoudakis and Ms Zenepe Dafku
12:00 – 13:00	SUSTAIN Management Committee Meeting	Ms Katarzyna Negacz and Ms Nadia Bazihizina
13:00 – 14:00	Lunch	
14:00 – 16:00	SUSTAIN WG2 and WG4 Meeting	Ms Jutta Papenbrock and Mr Henrik Per Aronsson
16:00 – 18:00	SUSTAIN WG5 and WG6 Meeting	Ms Vítor João Pereira Domingues Martinho and Ms Luísa Custódio
18:00 – 19:00	SUSTAIN Core Group Meeting	Ms Katarzyna Negacz and Ms Nadia Bazihizina
20:00	Gala dinner	

May 29

Venue: University of Valencia, Faculty of Geography, Valencia, Spain
JOAN FUSTER room

Online: <https://fao.zoom.us/meeting/register/tJ0qdOysrTMrHNS9LSgPWQZu6EVWbEBAbbjT>

Trainings on salt-affected soils and halophytes

8:45 – 09:00	Training school opening	Ms Eleftheria Dalmaris
09:00 – 10:45	Living with salinity: getting the right plant into the right place in saline landscapes	Trainer: Prof. Ed Barrett-Lennard, Principal Research Scientist, Agriculture and Food, Department of Primary Industries and Regional Development, WA, Australia
10:45 – 11:15	Coffee break	
11:15 – 13:00	Different methods of determining soil salinity	Trainers: Dr. Bas Bruning, The Salt Doctors and Mr. Andres Parra, The Salt Doctors
13:00 – 14:00	Lunch	
14:00 – 15:45	Visualization of geospatial data of the “Comunidad Valenciana” using smartphone	Trainer: Prof. Jorge Battle-Sales, University of Valencia, Chair of INSAS
15:45 – 16:15	Coffee break	
16:15 – 18:00	Modelling of water flow and solute transport in salt-affected soils	Trainer: Dr. Meisam Rezaei, Soil and Water Research Institute, INSAS Vice-Chair
May 30-31		
8:30 – 19:00	Field trips to salt-affected areas: Halophytes, salt-affected soils and saline water management	

Trainings

Training 1

Living with salinity: getting the right plant into the right place in saline landscapes

Trainer: Prof. Ed Barrett – Lennard, Principal Research Scientist, Agriculture and Food, Department of Primary Industries and Regional Development, WA, Australia

Abstract

The salinization of land and water resources is a global problem and the severity of adverse effects will be exacerbated by climate change. Increasingly, farming communities will need to learn to live with salinity, seeking advantage from the use of saline land and water. Farmers and their advisors need simple methods for getting the right plant into the right place to improve farmer incomes. Land capability needs to be thought of in terms of both the salinity of the soil and its water content. These two factors affect the salinity of the soil solution, and the risk of waterlogging and inundation: these are the two key drivers that affect plant growth and survival on saltland.

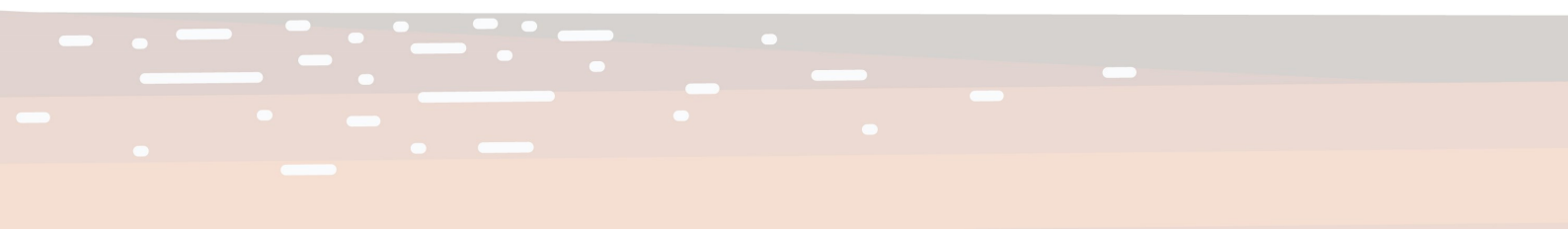
This training session will cover four themes:

- The principal causes of adverse effects of salinity on plants: osmotic and toxicity effects.
- The additional effects of waterlogging and inundation as constraints on saline land
- The ranges of tolerances of plants (glycophytes and halophytes) to salinity and waterlogging
- A framework for getting the right plant into the right place, supported by appropriate soil management strategies.

Learning outcomes

At the end of the training, students will understand

- the causes of the adverse effects of salinity on plants.
- The way in which waterlogging exacerbates adverse effects of salinity
- The variation in salt tolerance in plants (from salt sensitive glycophytes to salt tolerant halophytes)
- The variation in waterlogging/ inundation tolerance in plants
- How the saltland capability assessment matrix can be used to help locate the best plant to the best place in the landscape
- How key soil management strategies can be used to further improve the fit



Training 2

Different methods of determining soil salinity

Trainers: Dr. Bas Bruning, The Salt Doctors and Mr. Andres Parra, The Salt Doctors

Abstract

Soil salinity can lead to detrimental effects both in plants (crops) and soils. The latter is the case when the soil contains a high clay fraction. Salt effects on crops have various ways of manifesting themselves, but usually it results in reduced growth and thus smaller yields. Even though salinity is a common problem around the world with up to 25% of irrigated agriculture being affected by salinity, the levels of salinity can vary greatly both in space and time. For this reason, it is important to regularly monitor soil and water salinity levels. Additionally, people in different places of the world use different methods to determine soil salinity, and not always clearly report on the method used, which makes it hard for outsiders to properly interpret (published) results. During this short training we will show the participants different methods of measuring soil salinity. We will also look at the correlations between the results of the different methods, and determine conversion factors to 'translate' the results of one type of measurement to another.

Learning outcomes

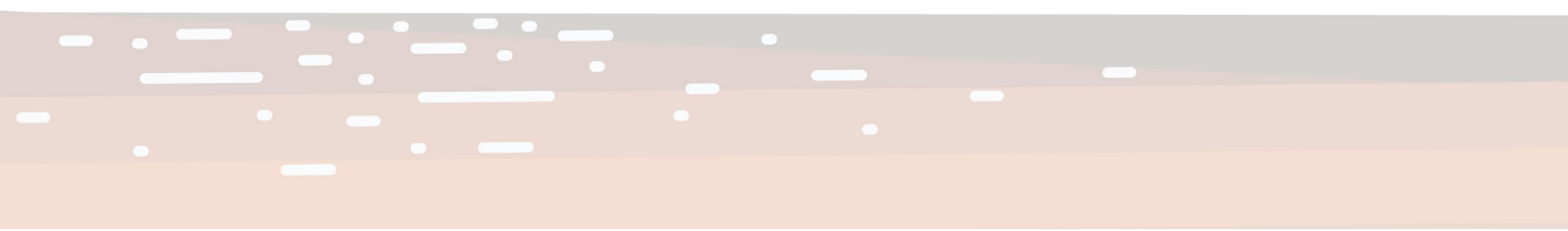
The participants will learn about different methods of determining soil salinity. Additionally, they will learn the correlations between the different methods and how to make those correlations.

Prerequisites needed

It would be nice if the participants have some basic understanding in the use of Excel, but this is not necessary; anyone can join and the more the merrier.

Equipment needed

The soil samples and measuring devices needed will be brought by us. It would be useful if the participants bring a laptop for making some basic correlations and graphs but this is not mandatory.



Training 3

Visualization of geospatial data of the “Comunidad Valenciana”

Trainer: Prof. Jorge Batlle-Salles, University of Valencia, Chair of INSAS

Abstract

Different Spanish Cartographic Institutes provide ease access to maps and geocoded environmental data as well as other data useful for environment planning and management. They include geological/lithological maps, maps of use of soils (CORINNE, SIOSE), hydrography, hydrochemistry of wells and groundwater, topography, biodiversity, residues, access to LIDAR, SRTM, LANDSAT, SENTINEL, orthophotos at high spatial resolution, access to SIGPAC, cadastral data, communications, ZEPA, LIC and other protected areas, including access to many other info layers through WMS and WMTS servers.

Learning outcomes

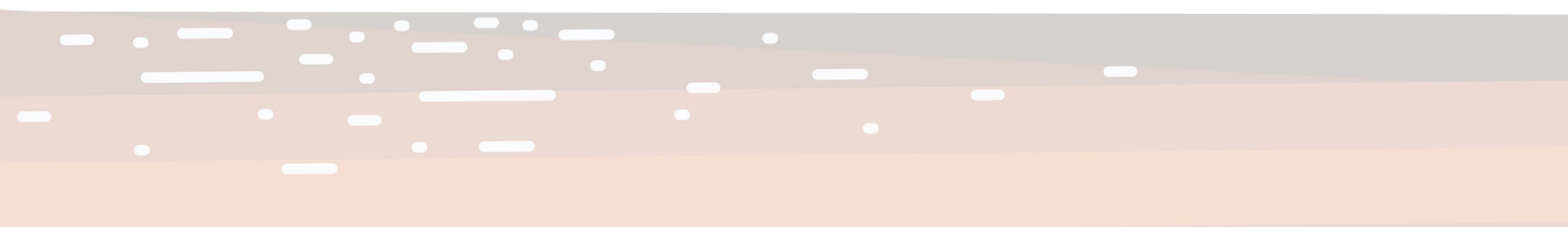
Capacity building for geospatial live navigation, recognition and recovery of in-situ environmental information, addition of tracks and vectorial own annotations for survey planning and planification of field trips. Orientation and information during the field excursions.

Prerequisites needed

No special prerequisite.

Equipment needed

Smartphone with GPS and internet connection for live navigation OR Computer for connection to GIS and WMS/WMTS. No preinstalled GIS is needed but the info can be incorporated to any GIS.



Training 4

Modeling of Water Flow and Solute Transport in Salt-Affected

Trainer: Dr. Meisam Rezaei, Soil and Water Research Institute, INSAS, Vice-Chair

Abstract

This training session, held during the SUSTAIN COST Action Training School in Valencia, focuses on providing a detailed conceptual and mathematical understanding of water flow and solute transport processes in the vadose zone of salt-affected soils. Participants will have the opportunity to gain hands-on experience with the HYDRUS computer software packages, including additional modules such as ROSETTA and UNSATCHEM. The training will cover the preparation of input data, solving water management problems, and interpreting simulation results.

Learning outcomes

- Understand the conceptual and mathematical description of water flow and solute transport processes in salt-affected soils.
- Gain familiarity with the HYDRUS computer software packages, including the ROSETTA and UNSATCHEM modules.
- Learn how to prepare input data for one-dimensional applications and solve water management problems.
- Acquire skills in interpreting simulation results for salt movement and irrigation strategies.

Prerequisites needed

Participants are expected to have a basic understanding of soil science and hydrology. Familiarity with mathematical modeling concepts will be beneficial.

Equipment needed

Participants are required to bring their own laptops for the training.

Operating Systems: Windows 8 or 10 or 11 (64-bit)

X64 CPU with 2 GHz

2 GB RAM

10 GB total hard disk capacity with about 500 MB reserved for installation

Graphic card with a resolution of 1280 x 800 pixels

For further information and to download the model, please visit: <https://www.pc-progress.com/en>

Field excursion

Salt-affected soils: threats and potentials

Field excursion 1. Date 30 May 2024

Departure 8:30 h from the “Facultad de Geografía e Historia”. Kindly arrive at least with 15 minutes of anticipation.

Return: Estimated arrival to Facultad de Geografía e Historia” 19:00 h.

- Visit to agricultural field under risk of salinization. Interview with farmer.
- Visit to the Marshland “Marjal dels Moros”.
- Visit to the water desalinization plant of Sagunto. (Personal identification data required).
- Technical stop at Torreblanca for lunch.
- Tour by the wetland of “Prat de Cabanes-Torreblanca”. Observation of peat mining impact on
- marine intrusion and visit to agricultural fields salinized.
- Return to Valencia by highway.

Field excursion 2. Date 31 May 2024

Departure 8:30 h. from the “Facultad de Geografía e Historia”. Kindly arrive at least with 15 minutes of anticipation.

Return: Estimated arrival to Facultad de Geografía e Historia” 19:00 h.

- Visit to Thermosolar energy plant (limited to 30 persons for security reasons. Personal identification data required).
- Reception at the “Comunidad de Regantes de la Huerta y Partidas” (Community of farmers that irrigate). Presentation of their experience on the management of water for irrigation.
- Technical stop at Villena for lunch.
- Field tour by the salt-affected soils. Observation of vegetation catenas along salinity gradients. Technical demonstration of survey of salinity with EMI and chemical tests.
- Visit to the Salt Playa Lake of “Salinas”. Observation of cultivars, landscape, salinity gradients
- and plants zonation. Technical demonstration of survey of salinity with EMI and chemical tests.
- Return to Valencia by highway

Recommendations:

Sun is strong at the dates of the excursions, hence hat, sunglasses, light clothes, sun protection creme, bottle of water and maybe some snacks may make more pleasant your experience. Mosquitoes repellent is strongly recommended for the excursion of the first day (maybe you can share a pharmacy spray with friends).

The tracks of the excursions will be available during the sessions of training.

We are convinced of that you will enjoy those two field excursions. The enterprises that collaborate have kindly prepared the visits and demonstration. We wait you in the bus!



The Global Soil Partnership (GSP) is a globally recognized mechanism established in 2012. Our mission is to position soils in the Global Agenda through collective action. Our key objectives are to promote Sustainable Soil Management (SSM) and improve soil governance to guarantee healthy and productive soils, and support the provision of essential ecosystem services towards food security and improved nutrition, climate change adaptation and mitigation, and sustainable development.

Land and Water Division
GSP-secretariat@fao.org
www.fao.org/global-soil-partnership

Food and Agriculture Organization of the United Nations
Rome, Italy



The International Network of Salt-Affected Soils (INSAS), launched in 2019 during the International Center for Biosaline Agriculture's (ICBA) first Global Forum on Innovations for Marginal Environments, is a Technical Network of the Global Soil Partnership (GSP) and follows its Rules of procedure. The Network aims to facilitate the sustainable and productive use of salt-affected soils for current and future generations. INSAS's mission is to support and facilitate joint efforts towards the sustainable management of SAS for food security, agricultural sustainability and climate change mitigation.

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