Food and Agriculture Organization of the United Nations

GLOBAL SOIL PARTNERSHIP

10th Plenary Assembly

Birthday 10 years 2012 - 2022

23 - 25 May 2022

VIRTUAL MEETING

International network of salt-affected soils (INSAS)

Jorge Batlle-Sales, Chair

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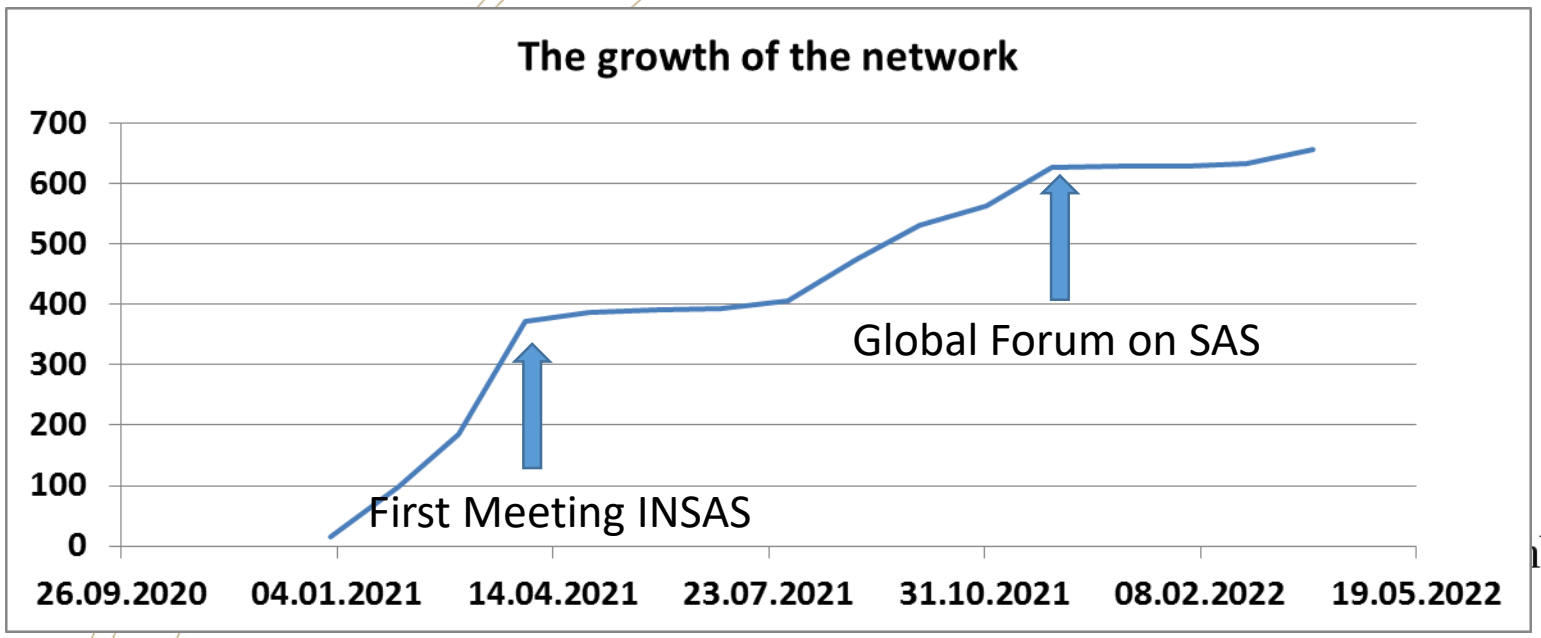
About INSAS

- INSAS was established in 2019 under the aegis of the Global Soil Partnership with the aim to **facilitate the sustainable and productive use of salt-affected soils** for current and future generations
- **First meeting of INSAS** took place on April 14-15, 2021 (virtual format) where the **governance** of INSAS was established and the **working groups** were formed
- At present, INSAS has **689 members** from **124 countries**



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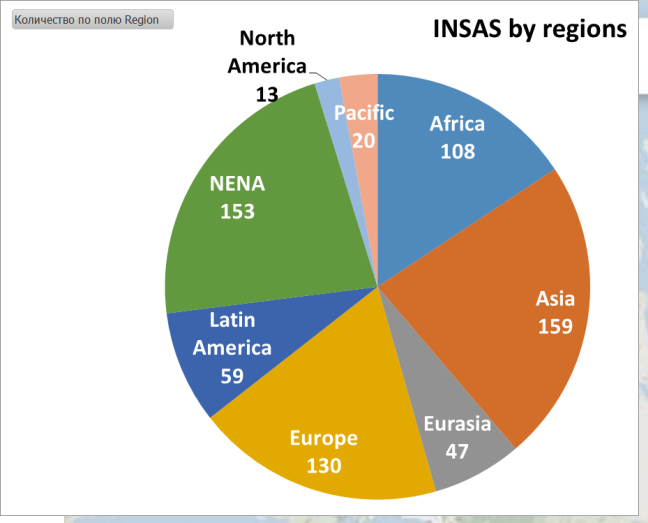
Geographic coverage of INSAS



689 members from 124 countries

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Working groups of INSAS

Working group	Activity	Number of experts	Number of countries represented
SAS&Assessment	Mapping, assessing and monitoring of salt-affected soils	**132**	**57**
SAS&SSM	Sustainable management of salt-affected soils (practices, policy)	**152**	**67**
SAS&Crops	Halophyte agriculture and salt-tolerant crops and plants	**61**	**31**
SAS&Water	Integrated soil and water management under saline/sodic conditions	**127**	**58**

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INSAS working sessions (May – September 2021)

Working group	1st working session	2nd working session
SAS&Assessment: Mapping, assessing and monitoring of salt-affected soils	**May 24**: getting to know each other and defining the priority theme Decision: Review and refinement of methodology for mapping salt-affected soils	**August 2**: Discussion of the concept, structure, and content of the refined methodology for mapping salt-affected soils **Outcome: the draft Table of Content**
SAS&SSM: Sustainable management of salt-affected soils (practices, policy)	**May 25**: getting to know each other and defining the priority theme Decision: Good practices: database on SSM practices of SAS (part I "Inventory")	**September 13**: revision of the draft of the Practice/Technology for sustainable management of salt-affected soils **Outcome: the revised template**
SAS&Crops: Halophyte agriculture and salt-tolerant crops and plants	**June 14**: getting to know each other and discussion of the models/scenarios which predict the crop/plant production based on soil salinity/sodicity levels Decision: collect the existing information about such models/scenarios to overview in the next meeting	Scheduled for June and October 2022
SAS&Water: Integrated soil and water management under saline/sodic conditions	**June 15**: getting to know each other and defining the priority theme Decision: Development of the manual on sustainable water management in saline/sodic environments	Scheduled for June and October 2022

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INSAS working sessions 2022

- Plenary meeting of the working groups of INSAS, 16 May.
  - Presentation of the Questionaire on the SAS status.
  - Presentation of the collaboration with GLOSOLAN.
  - Agreement on dates for WG meetings.
  - Anouncement of future closer interaction with IUSS Commission 3.6 (SAS).
  - Discussion of the webminars to be elaborated during 2022 and request for volunteers to contribute.

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INSAS webinars: potential themes

- EMI calibration
- Representative sampling
- Geostatistics with high resolution mapping
- Use of eHaloph
- Reactive transport modelling (with crop growth)
- Approach to crop growth under abiotic stress
- Indicators and indexes
- Evaluation of cost/benefit of management practices
- Governance of salt-affected soils
- Water management
- Crop nutrition at SAS

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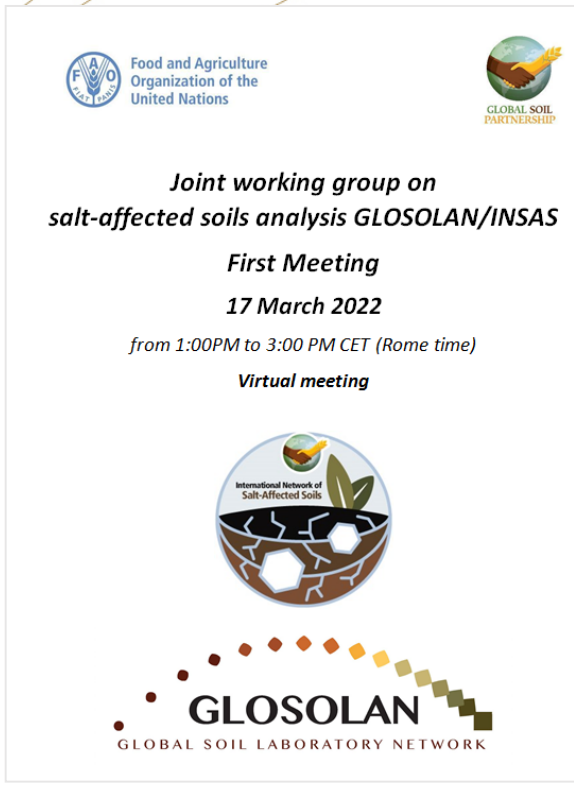
GLOSOLAN/INSAS joint working group meeting 17 March 2022

- Revision of existing SOPs related to salt-affected soils:
  - SOP for electrical conductivity
  - SOP for saturated soil paste extract
  - SOP for boron
- Development of new SOPs related to salt-affected soils:
  - ESP, several analytical methods
  - SAR, several methods
  - Alkalinity in soil saturated paste extract
  - Conservation of samples (to avoid precipitation of cations and alkalinity)
  - Analysis of Boron, several analytical methods
  - Soil sampling design, volume and homogenization of samples.
  - Soil particle size analysis



First tasks:

- Calibration between different measurements of EC and TSS
- SOP on Boron, reviewed by INSAS experts

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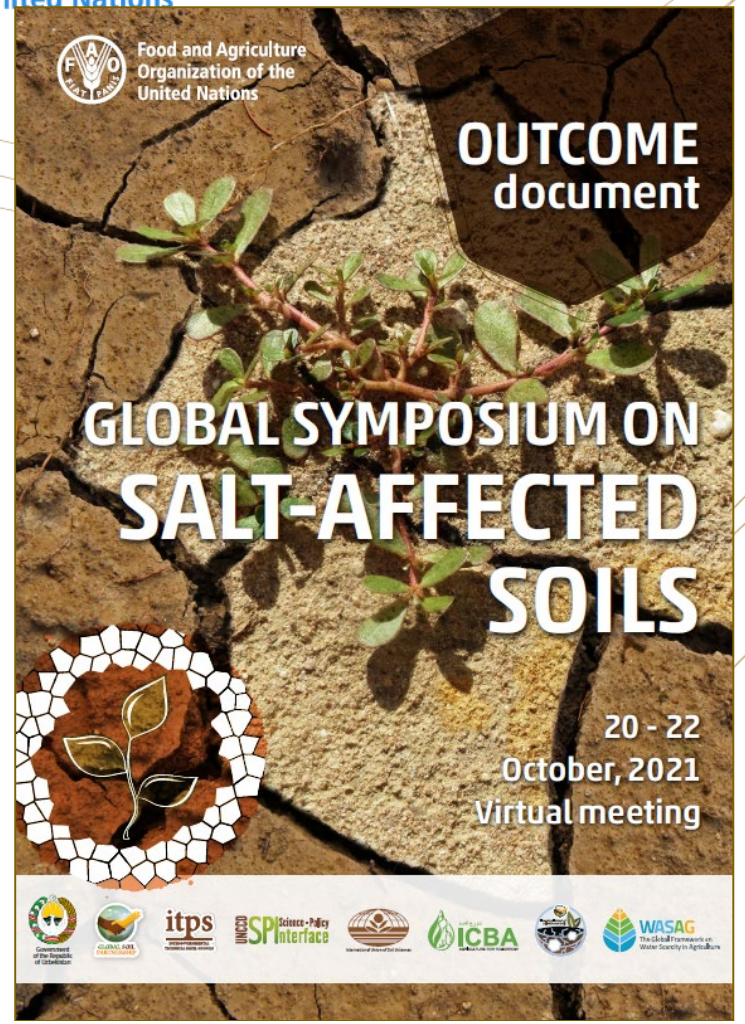
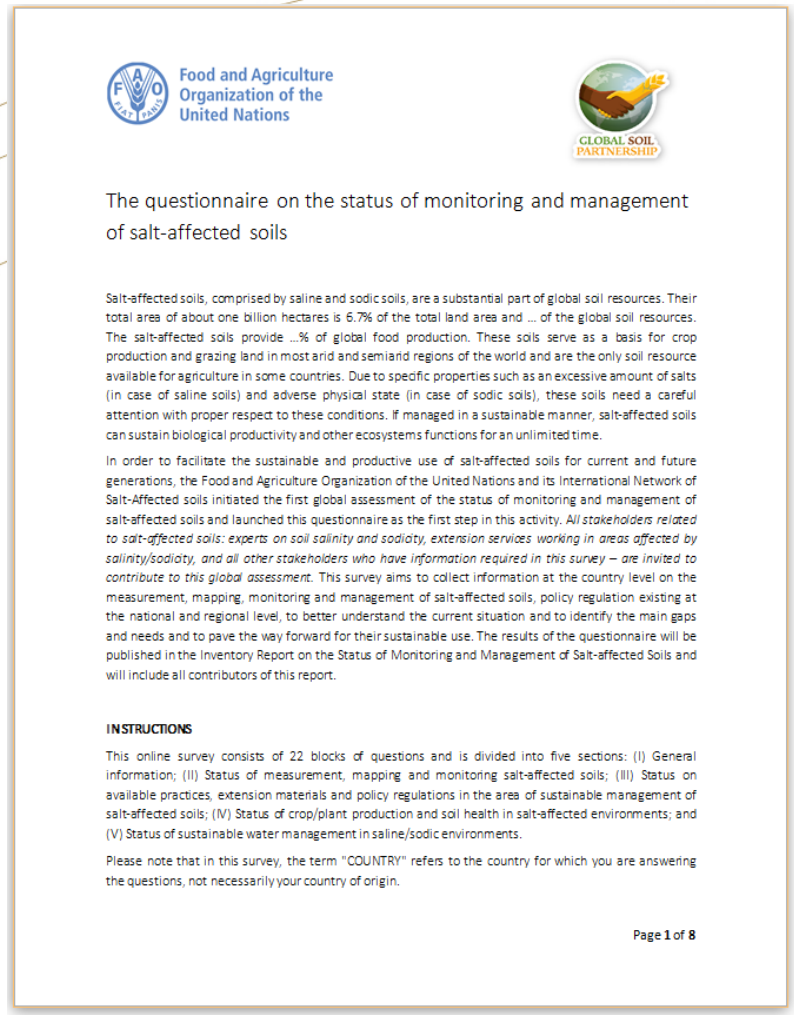
Documents developed by INSAS



GSAS Outcome document

(published)



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The questionnaire on the status of monitoring and management of salt-affected soils

Salt-affected soils, comprised by saline and sodic soils, are a substantial part of global soil resources. Their total area of about one billion hectares is 6.7% of the total land area and ... of the global soil resources. The salt-affected soils provide ...% of global food production. These soils serve as a basis for crop production and grazing land in most arid and semiarid regions of the world and are the only soil resource available for agriculture in some countries. Due to specific properties such as an excessive amount of salts (in case of saline soils) and adverse physical state (in case of sodic soils), these soils need a careful attention with proper respect to these conditions. If managed in a sustainable manner, salt-affected soils can sustain biological productivity and other ecosystems functions for an unlimited time.

In order to facilitate the sustainable and productive use of salt-affected soils for current and future generations, the Food and Agriculture Organization of the United Nations and its International Network of Salt-Affected soils initiated the first global assessment of the status of monitoring and management of salt-affected soils and launched this questionnaire as the first step in this activity. *All stakeholders related to salt-affected soils: experts on soil salinity and sodicity, extension services working in areas affected by salinity/sodicity, and all other stakeholders who have information required in this survey – are invited to contribute to this global assessment.* This survey aims to collect information at the country level on the measurement, mapping, monitoring and management of salt-affected soils, policy regulation existing at the national and regional level, to better understand the current situation and to identify the main gaps and needs and to pave the way forward for their sustainable use. The results of the questionnaire will be published in the Inventory Report on the Status of Monitoring and Management of Salt-affected Soils and will include all contributors of this report.

INSTRUCTIONS

This online survey consists of 22 blocks of questions and is divided into five sections: (I) General information; (II) Status of measurement, mapping and monitoring salt-affected soils; (III) Status on available practices, extension materials and policy regulations in the area of sustainable management of salt-affected soils; (IV) Status of crop/plant production and soil health in salt-affected environments; and (V) Status of sustainable water management in saline/sodic environments.

Please note that in this survey, the term "COUNTRY" refers to the country for which you are answering the questions, not necessarily your country of origin.

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Questionnaire on Salt-Affected Soils

(under 2° iteration of revision by INSAS working groups)

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Documents under development of INSAS: Global Status of Salt-Affected Soils

Introduction

Chapter 1. The assessment of salinity / sodicity / alkalinity

Chapter 2. Mapping and monitoring of salt-affected soils

- 2.1. The methodology of mapping at the local, national and global scale
- 2.2. The development of bottom-up approach to monitor SAS

Chapter 3. The national reports on the status of salt-affected soils

Chapter 4. Salt-tolerant crops

- 4.1. Effect of salinity/sodicity on soil and plant growth
- 4.2. Salt tolerance mechanism
- 4.3. Crop tolerance and yield potential
- 4.4. Factors affecting salt tolerance

Chapter 5. Sustainable management and economics of salt-affected soils

- 5.1. The main objective of reclamation of SAS (saline and sodic)
- 5.2. Irrigated farming
- 5.3. Rainfed farming
- 5.4. The economic aspects of SSM in SAS (with economic benefits)

Chapter 6.Sustainable water management in saline environments

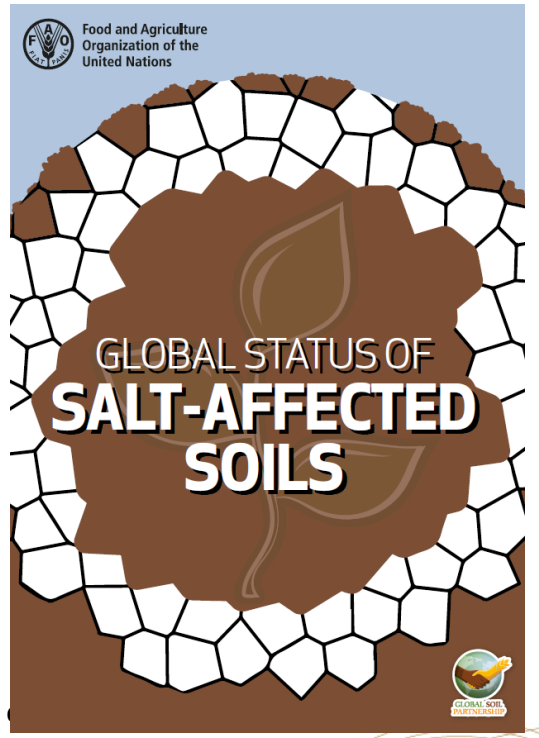
- 6.1. Water quality characterization, classification and its impact
- 6.2. Guideline for using brackish water
- 6.3. Specific toxic ions and their management

Chapter 7.Specific cases of salt-affected soils

- 7.1. Grey water use
- 7.2. Urban and road salinization by chemicals (de-icing agents)
- 7.3. Overfertilization
- 7.4. Natural salinization caused by permafrost thawing
- 7.5. Salinization caused by oil extraction and other sorts of mining
- 7.6. Salinization of the coastal area caused by salt water intrusion
- 7.7. Tsunami-affected salinization of the coastal areas

Chapter 8. The natural environments with salt-affected soils as a shelter biodiversity

Chapter 9.Governance related to the sustainable management of salt-affected soils



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The international fora where INSAS activity was presented

- **Perú, October 1, 2021,** Conference “Research perspectives in SAS” organized by the Instituto de Biología del Suelo
- **México, October 8, 2021,** 45 Congreso Nacional de la Ciencias del Suelo “Evolución de los indicadores de calidad ambiental”
- **India, October 29-31, 2021**, 2nd International Web-Conference on Smart Agriculture for Resource Conservation and Ecological Stability organized by the Academy of Natural Resource Conservation and Management (ANRCM)
- **Iran, December 4, 2021,** International webinar on “Machine Learning to Map and Monitor Soil Salinity” organized by the National Salinity Research Center (NSRC) celebrating the World Soil Day
- **Russian Federation, December 5, 2021,** World Soil Day “Halt soil salinization, boost soil productivity”
- **Desernet International (DNI), December 5, 2021**
- **Spain, December 6, 2021,** World Soil Day, Special event organized by the Sociedad Española de la Ciencia del Suelo and the Polytechnical University of Valencia, Spain
- **Netherlands, April 5-6, 2022**, SalFar conference

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Focal points and other partners of the GSP are invited to:

- Encourage national governments and respective governing institutions in the countries facing soil salinity and sodicity issues to **join INSAS and participate** in the different activities of the network aiming at the sustainable management and restoration of these soils
- Encourage national governments and respective governing institutions in the countries facing soil salinity and sodicity issues **to facilitate the implementation** of the outcomes of the Global Symposium on Salt-affected Soils;
- Provide **financial support** to the activity of INSAS.

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