Food and Agriculture Organization of the United Nations

GLOBAL SYMPOSIUM ON SALT-AFFECTED SOILS

20 - 22 October, 2021
Virtual meeting

Main conclusions and key findings
Theme 3: Agenda for action

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Government of the Republic of Uzbekistan
GLOBAL SOIL PARTNERSHIP
itps INTERGOVERNMENTAL TECHNICAL PANEL ON SOILS
United Nations Convention to Combat Desertification
International Union of Soil Sciences
ICBA AGRICULTURE FOR TOMORROW
WASAG The Global Framework on Water Scarcity in Agriculture

Theme 3: Agenda for action

Theme 3 aims to set the principles of a global agenda for action to **prevent** and **rehabilitate** salt-affected soils, **protect natural saline and sodic soils**, and **scale-up** sustainable soil management practices

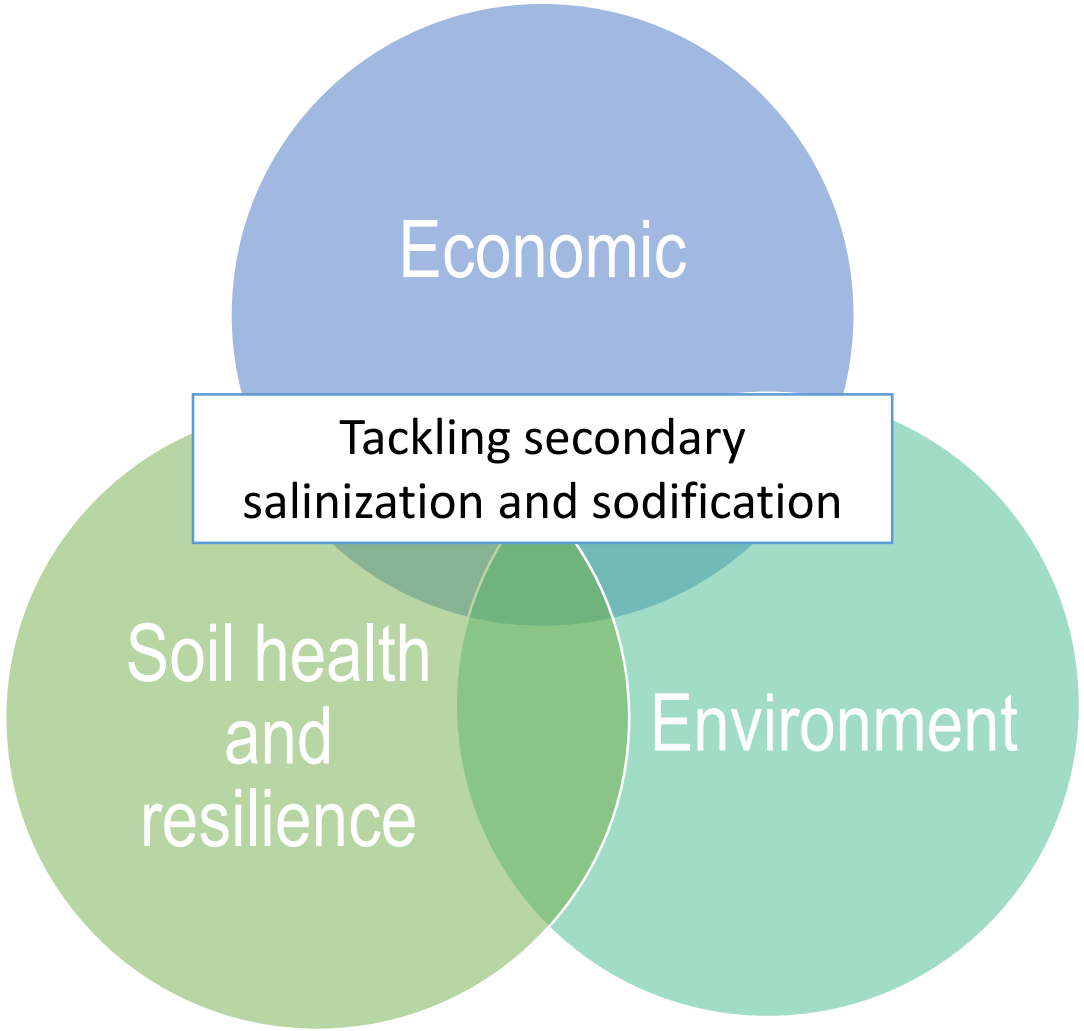
Objectives:

- Identify and review innovative management practices and technologies for the management and remediation of salt-affected soils;

- Critically analyze the economics of soil salinization and sodification while focusing on the sustainable soil management practices that are cost-effective; and

- Advocate for an agenda for action on salt-affected soils to prevent, adapt to, mitigate and monitor secondary soil salinization and sodification processes as well as to protect and ensure sustainable management of natural salt-affected soils.

Theme 3: Agenda for action



Krishna Devkota *et al.*

- 2 Keynote presentations
- 14 Oral presentations
- 3 Posters

Learning how to live with SAS

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Theme 3: Core questions

How to prevent and rehabilitate salt-affected soils?

- Need to join forces confronting salinity/sodicity, work from local to global, involve all stakeholders

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- Policy support is needed (example from the North Sea Region, Negacz *et al.*)

- Monitoring systems of salt-affected areas or areas prone to develop salt problems are needed to reduce pressing land degradation

Theme 3: Core questions

How to prevent and rehabilitate salt-affected soils?

- Consider landscape and manage drainage

(case of Argentina, Taboada *et al.*)

- Coastal areas are more vulnerable to suffer the negative
- effects of climate change and salinity.
- An assessment and classification of their potential uses is needed: for the purpose of mitigation, adaptation or ecosystem restoration. (case of Southeast US, Gibson *et al.*)

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Theme 3: Core questions

How to prevent and rehabilitate salt-affected soils?

- Unsustainable practices leading to the loss of SOC that exacerbate the risk of secondary salinization/sodification

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- Not all sources of SOM are suitable for soils prone to salinity/sodicity (example from Spain, Baigorri *et al.*)
- Technology and capacity building of farmers must go hand in hand for successful reclamation (Verma *et al.*)

Theme 3: Core questions

How salt-affected soils can be managed sustainably?

- Salt-affected soils posees multiple constraints to agriculture, but if managed sustainably can provide a good livelihood for farmers
- Example of Prakasam, India, where farmers diversify their land and produced 2.4 times more yield than non-SAS (Subbaiah *et al.*)

© Chris Miller. Nancy Gibson *et al.*

- Salt-affected soils have a great potential when restored and can contribute to climate change mitigation efforts (example of Greece, Triantakonstantis *et al.*)

Theme 3: Core questions

How salt-affected soils can be managed sustainably?

- Adaptation measures: salt tolerant crops, wetland conservation, appropriate agronomic practices, proper irrigation and soil health maintenance (Southeast Climate Hub, Gibson *et al.*)
- Incentives to avoid land abandonment

(case of Kuwait, Hana'a A Burezq *et al.*)

- Integrated management (case of Bangladesh, Shoaib *et al.*)

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Theme 3: Core questions

How salt-affected soils can be managed sustainably?

- Innovative solutions needed rather then the traditional (EU EIP-AGRI Focus Group on soil salinity, Constantini *et al.*)
  - simulation models and Decision Support Systems to define irrigation quantity and frequency, use of different chemical amendments for reclamation of saline sodic and sodic soil followed by drainage.
  - Foster nature-based solutions: phytoremediation, improved crop rotations, bioinoculants
  - Land use change to protect and conserve salt-affected areas against soil erosion through land leveling and using cover crops

©Shoaib

Theme 3: Core questions

How salt-affected soils can be managed sustainably

- Different environments have different strategies for managing salt-affected soils. SAS in plain and dry climate need use of drought tolerant crops whereas wetland need drainage and use of chemical amendments for reclaiming sodic and saline sodic soils
- Use of charcoal as an amendment may be useful but care must be taken if there is shortage of good quality water in salt-affected soils
- Once the salts were leached down from the root zone and not drained, will bring salts back to the surface. Thus drainage must be coupled with leaching of salts beyond root zone (Dharmesh Verma).

Theme 3: Key Messages and Conclusions

- More then 1 b ha of land are adversely affected by salinity/, including more than 20% of all the irrigated arable land.
- Data collection for informed decision-making: natural or secondary SAS?
- Coordination and Cooperation: consult all stakeholders (farmers, policy makers, researcher, academia etc)
- Increased investment: by developing technology and capacity building
- Appropriate crop selection and management practices: learn from multiple successful experiences
- Political support and commitment
- Promoting marketing and valuation of SAS products

Theme 3: Key Messages and Conclusions

- Saline agriculture is gaining popularity as it is economical, sustainable and environmentally acceptable thus present on the policy agenda
  - Recommendations in governance of landscape for saline agriculture: internationalization, involvement of social actors
  - Establishing a monitoring system of SAS or areas prone to develop salinity/sodicity problems could minimize the constantly increasing degradation of fertile agriculture land worldwide.
  - High pH, salinity and sodicity hamper productivity, have different causes, thus must be treated differently (most important)

Theme 3: Key Messages and Conclusions

- Diagnosing , monitoring soil problems, source of salts, crop sensitivity, and irrigation water quality are the key to determining effective management strategies
- Chemical amendments: testing of mined gypsum, coalgypsum, lactogypsum, in comparison with acid or acid formers chemicals are better and economical
- Phytoremediation is cheaper and more sustainable
- Microbial management: Selection and use of bioinoculants for plants and soils (Need validation under field condition in different regions)

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FOR LISTENING