Food and Agriculture Organization of the United Nations

International Network of Salt-Affected Soils (INSAS)

lessons learned from agricultural R&D projects in salt-affected areas

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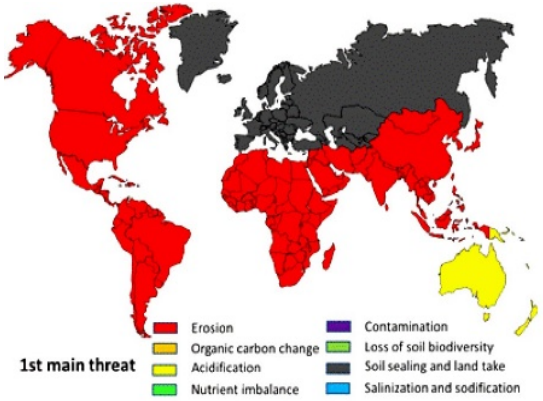
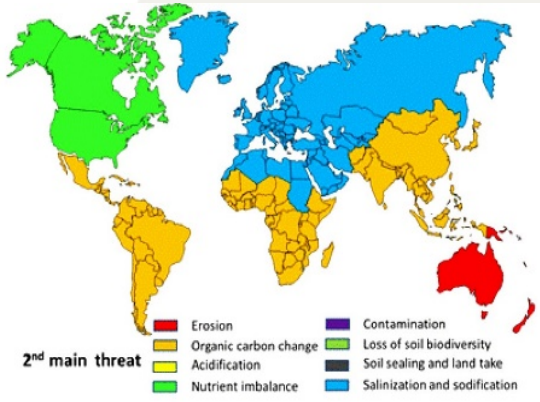
ICBA AGRICULTURE FOR TOMORROW

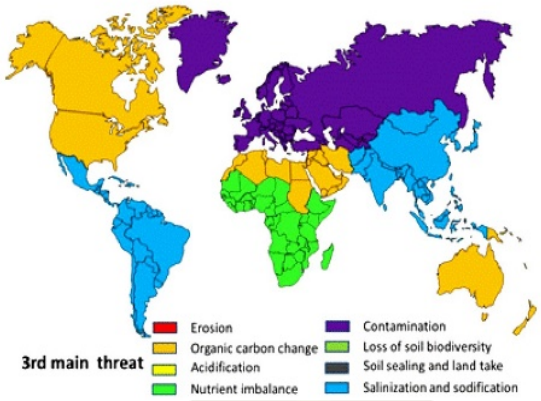
GLOBAL SOIL PARTNERSHIP

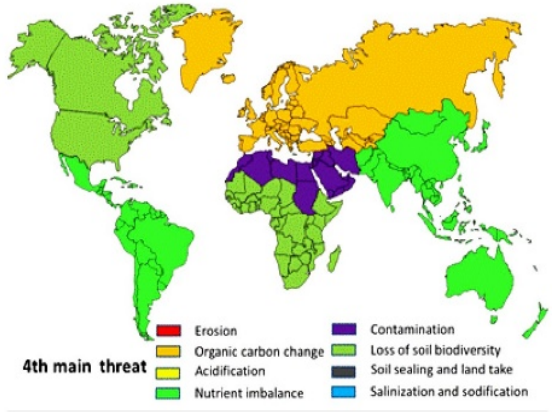
Salinization is Global potential soil threat

- Erosion
- Loss of organic carbon
- Nutrient imbalance
- Salinization









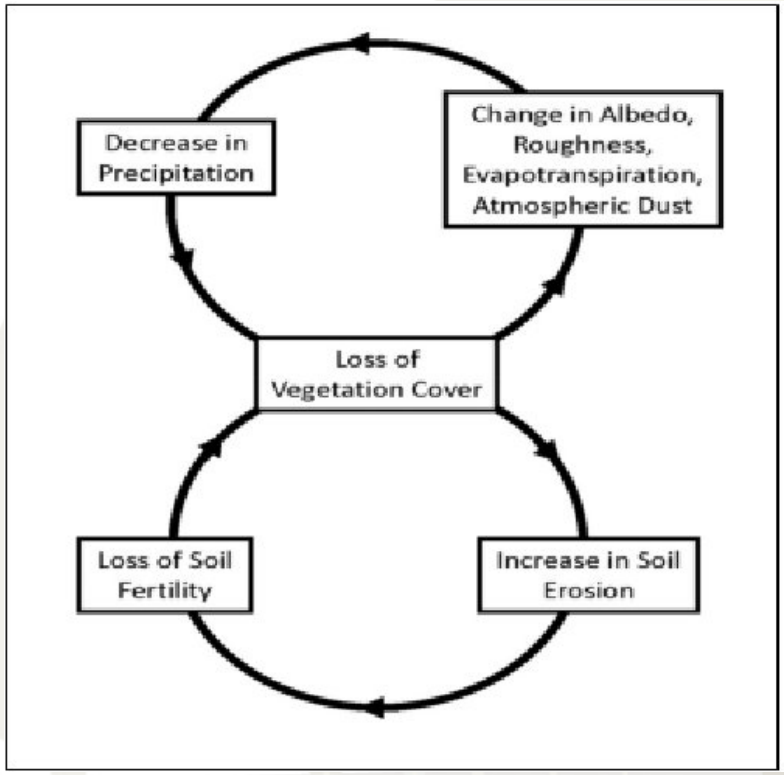
World's soils are under threat

Montanarella L. et al 2016

Soil salinization -climate change interactions

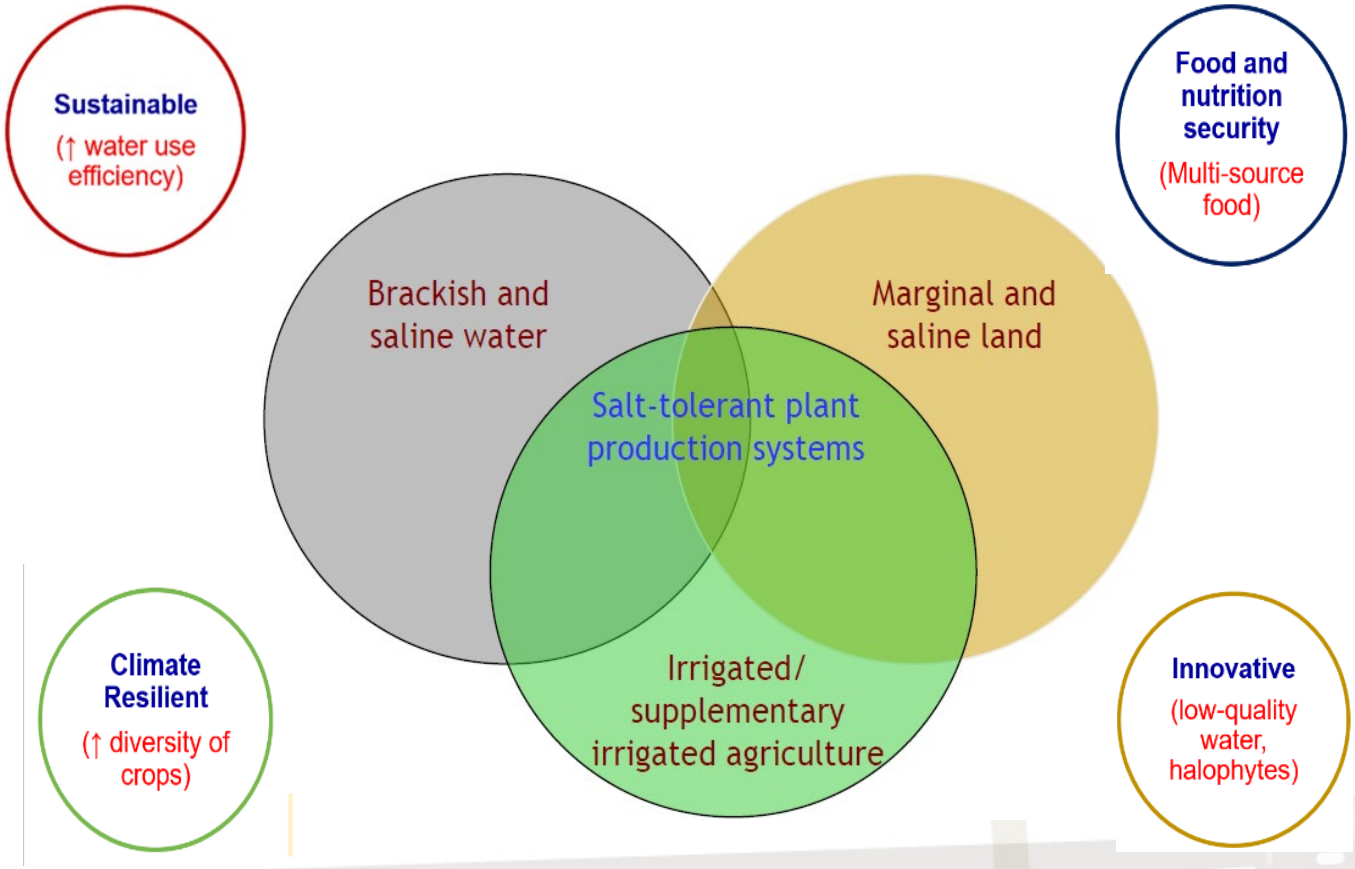
- Cycle of subsidiary processes of desertification such as soil erosion

Boloorani et al. 2014




Adaptation
Mitigation

Biosaline agriculture approach



Partnerships

Capacity building

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International Network of Salt-Affected Soils (INSAS)

Rehabilitation of Degraded Lands in UAE

- Farms abandoned due to high irrigation water **salinity** *(15-18 dS/m)*
- ICBA introduced four salt-tolerant perennial grasses:
  - ✓ *Distichlis spicata,*
  - ✓ *Sporobolus virginicus*
  - ✓ *Sporobolus arabicus*
  - ✓ *Paspalum vaginatum*
- Fresh biomass yields ranged 75-150 t/ha/yr → 66% higher than Rhodes grass *(low salinity 2 dS/m)*
- 44% less water use than traditional forages

Biosaline agriculture in Pakistan

Nuclear Institute for Agriculture and Biology (NIAB) in PAKISTAN adapted the saline agricultrure approach in salt affected areas in in Shorkot and Lodhran

- livestock number and aquaculture enterprises rose sharply, promoting high-value agriculture.
- plant production and, thus, farmer income increased
- Chemical properties of soils also improved

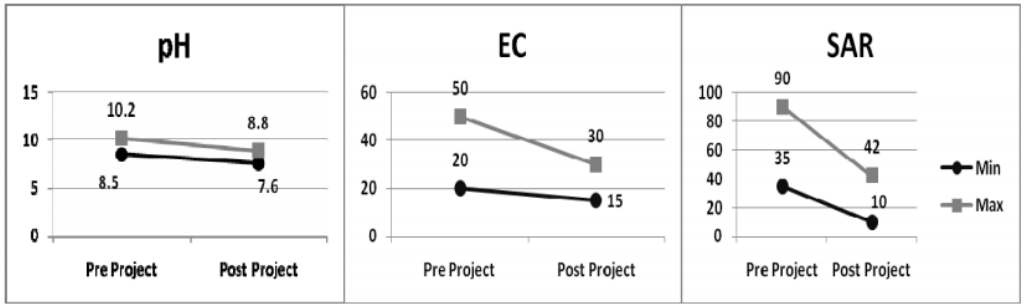
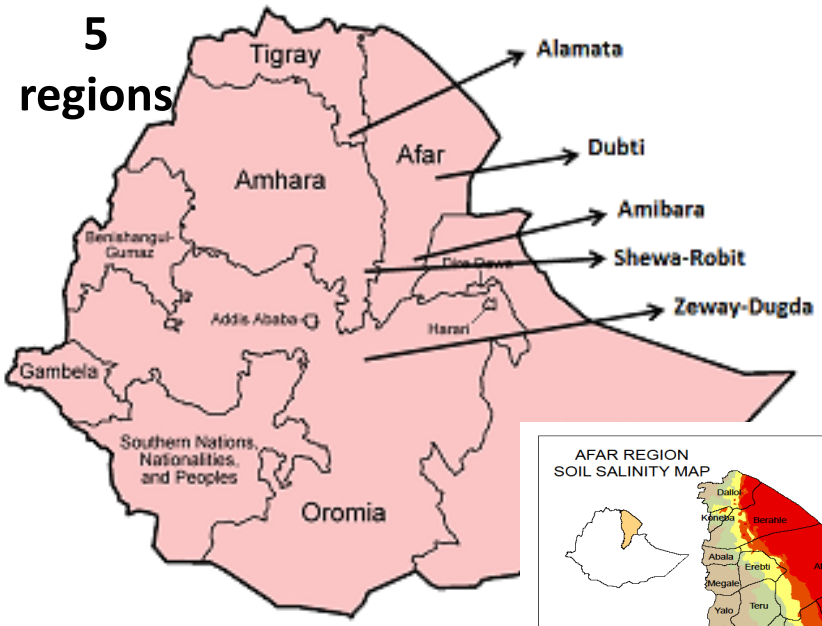
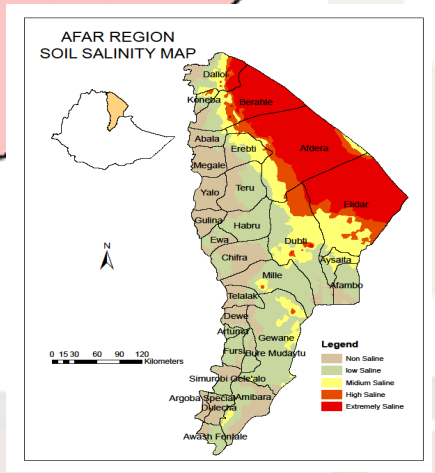


Fig. 14. Pre- and post-planting range of soil properties of a Kallar grass field.

Fig. 36. Scientists from International Center for Biosaline Agriculture (ICBA), UAE.

Rehabilitation of Degraded Lands in Ethiopia





Demonstrate how to recover 11 M/ha of degraded land

Improve food security and income of marginalized communities.

- *salt-tolerant crops and forages*
- *Crop-livestock value-chain systems.*

Biosaline Agriculture

- Releases pressure on good quality water and land resources
- Utilizes wastelands and poor quality water resources
- Provides new sources of food, feed, biofuels and fiber
- Generates employability particularly youth and women;
- Climate change mitigation: *rehabilitation of degraded lands, Carbon sequestration*.
- Climate change adaptation: improves resilience of local communities.

Improved food and nutrition security. Improved livelihoods.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