



Food and Agriculture
Organization of the
United Nations

GLOBAL
SYMPOSIUM on
SOILS and **WATER**

02-05 October, 2023

Soil and water:
a source of life

Soil and Water Management in salt affected agricultural areas

Marco Arcieri – ICID Vice President



WASAG

The Global Framework on
Water Scarcity in Agriculture



WASAG WORKING GROUP
**SALINE
AGRICULTURE**



INTERGOVERNMENTAL
TECHNICAL PANEL ON SOILS



GLOBAL SOIL
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One of the major constraints to agriculture is soil salinity. Today, salinity is reported to affect one billion hectares, mostly located in arid and semiarid regions.





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THEMATIC 1

FARMERS' GUIDELINES ON SOIL AND WATER MANAGEMENT IN SALT-AFFECTED AREAS



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**SALINE
AGRICULTURE**

The WASAG Saline Agriculture working group developed practical guidelines for farmers implementing agriculture in salt-affected areas to assist them in their decision-making processes in dealing with salinity/sodicity issues in their lands. The guidelines were split into two thematic volumes. Thematic 1 focuses on “Soil and Water management in salt-affected areas” and thematic 2 on “Saline farming in salt-affected areas”.

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Multi-Institution Collaboration



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Targeted beneficiaries



Farmers



Agricultural entrepreneurs

Extension Services officers

Local farming enterprises

Agricultural cooperatives

Develop the guidelines as a dynamic tool through FAO platform, to be periodically updated, based on recent research advances and outputs.

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The Challenge



Simple technical language

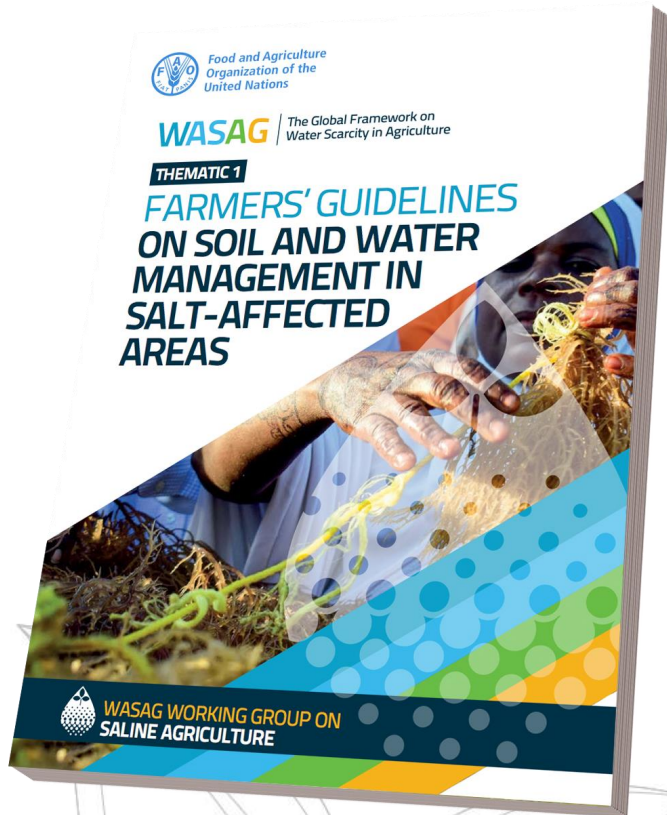
- Questions and Answers format
- Deliver it in more simplified technical language, laypeople, handy terms that allow farmers to follow and deal with salinity/sodicity issues effectively, while keeping the scientific essence to its core.



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Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas

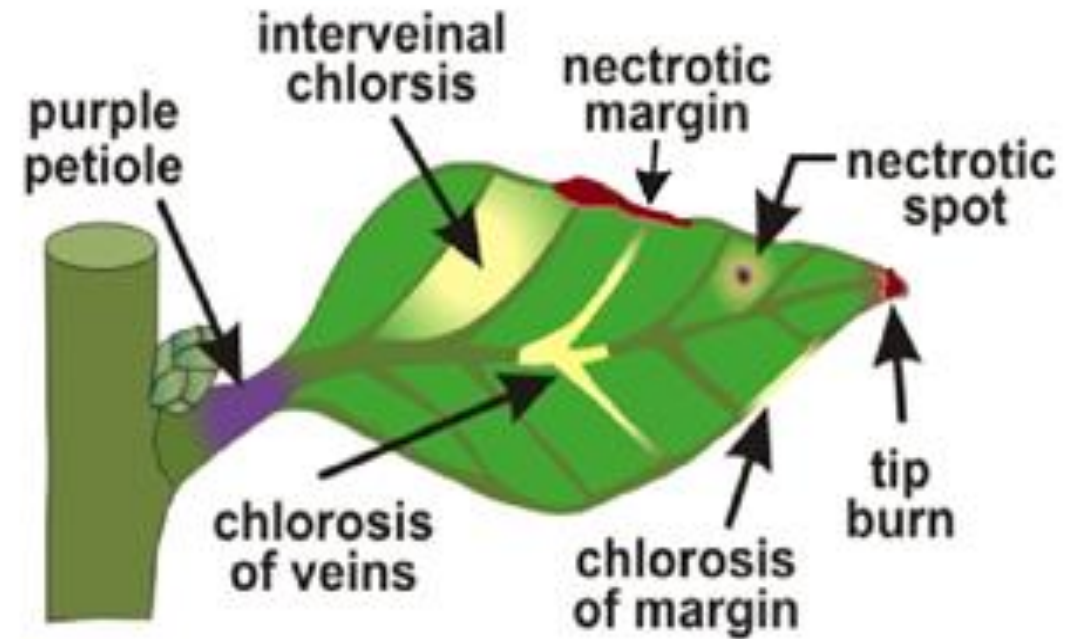
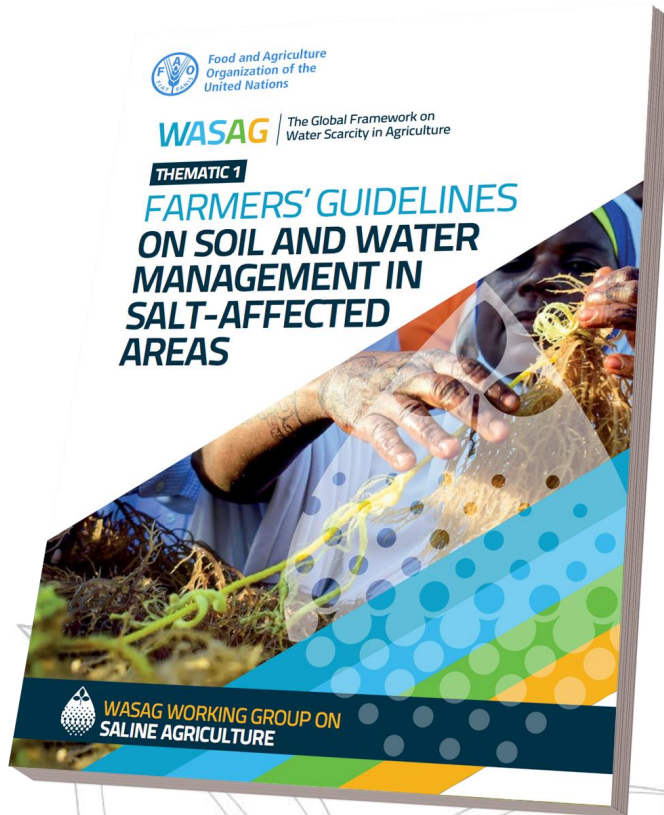


- *This section introduces the user to the global challenge of salinity and sodicity and highlights why much effort ought to be dedicated for their proper assessment and management, in order to improve livelihoods and welfare of marginal resource-poor farmers.*

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Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas



- *Uniting the understanding of salinity and sodicity, including their appropriate terminology, under one common definition is paramount. This section explains how primary and secondary salinization occur along with other related phenomena. In addition, it sheds light on the effects of salinity and sodicity on plants.*

Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas



Salt-affected soils in Spain.
Source: Antonio Jordán



Reduced plant vigor
Source: Winfield United salt breeding nursery



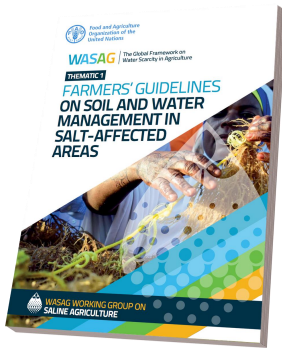
Patchy crop establishment.
Source: DPIRD.



Reduced or no seed germination.
Source: SERC-Carleton



Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas



- Simple guidelines for infier methods for soil and cr measurements. Furtherm sampling for salinity/so measurement results is pr

ment-based assessment orate laboratory-based -reliable soil and water salinity and sodicity

ber, 2023



Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas



- Irrigation recommendations for salt-affected soils and/or with water high in salts are provided. The different irrigation methods (drip, sprinkler, subsurface) are discussed. Strategies for successful management of water resources under salinity constraints are thoroughly explained. These include leaching (requirement, frequency), drainage (system, depth, spacing), irrigation (system, scheduling), and use of multiple water sources (alternating, blending).*

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Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas

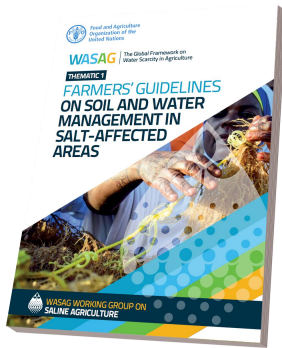


- Irrigation recommendations for different irrigation management of water leaching (requirement use of multiple water

in salts are provided. The strategies for successful are explained. These include (system, scheduling), and



Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas



- *Recommendations on soil-related management strategies under saline/sodic conditions are presented. These include land levelling, tillage and subsoiling, seedbed shaping, and salt scraping. Salt affected soils can be improved for crops via the application of soil amendments (green manures, compost, fertilizers). Other strategies and methods, such as selection of suitable crops for managing salt-affected soils, are also highlighted, as elucidated in Thematic 2.*

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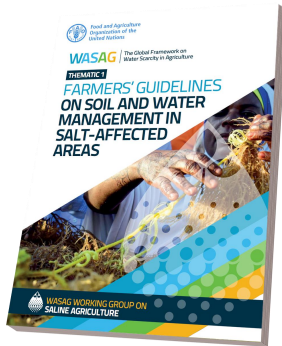


Thematic 1: Farmers' guidelines on soil and water management in salt-affected areas



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Thematic 2: Saline agricultural production systems tailormade for salinized rural areas



• *... approaches that can incorporate salt-tolerant crops, crop rotation, and integrated farming systems with livestock and aquaculture, in order to minimize external inputs through nutrient and water recycling, decrease the ecological footprint and promote biodiversity through growing a variety of crops.*

Thematic 2: Saline agricultural production systems tailor-made for salinized rural areas



- *Saline farming also represents an opportunity to practice unconventional agriculture by growing salt-tolerant varieties of conventional crops and halophytes (highly salt-tolerant plants) in salinized areas, where food production constitutes a big challenge for the local communities.*



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Thematic 2: Saline agricultural production systems tailormade for salinized rural areas



Halophyte grasses - Dubai



Barley genotypes - Dubai



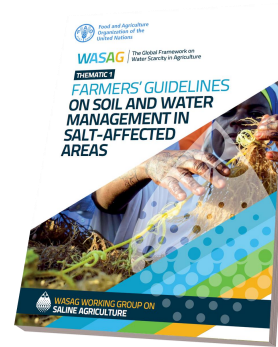
Halophyte shrub Atriplex - Dubai



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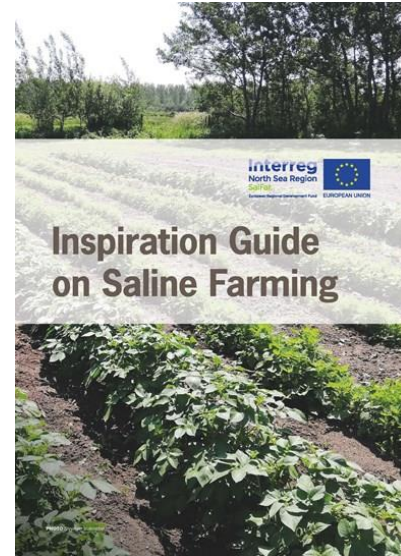
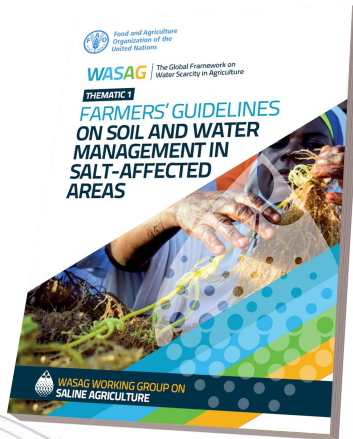


Thematic 2: Saline agricultural production systems tailormade for salinized rural areas



- *Proper management practices (irrigation, fertilization, soil management, pest control etc.) should be applied to secure the sustainability of natural resources and the longevity of the farming schemes.*

Thematic 2: Saline agricultural production systems tailor-made for salinized rural areas

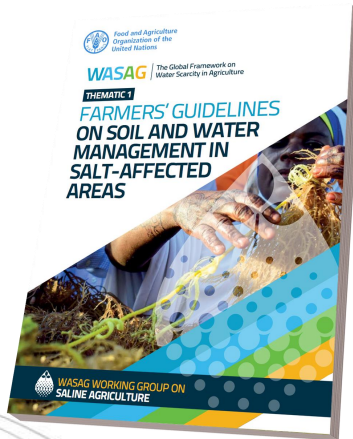


- *Outcomes, products and relevant material will be extracted from successful projects that introduce and scale up saline farming ventures in salinized areas on global scale.*

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Thematic 2: Saline agricultural production systems tailor-made for salinized rural areas



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Thank you for your attention



www.fao.org/wasag/working-groups/saline-agriculture/en

