



Food and Agriculture
Organization of the
United Nations

GLOBAL SYMPOSIUM ON SALT-AFFECTED SOILS

Main conclusions and key findings
Theme 2: Integrated solutions
and Testimonies from the field

20 - 22
October, 2021
Virtual meeting

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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



International Network of
Salt-Affected Soils



WASAG
The Global Framework on
Water Scarcity in Agriculture

Theme 2: Integrated soil – water – crop solutions in rehabilitation and management of salt-affected areas

Testimonies from the field – Good practices to manage salt-affected soils

(Voice from the Bottom) & and reciprocal Approach

Objectives:

- Identify and review innovative management practices and technologies for the management and remediation of salt-affected soils;
- Showcase the good practices illustrating the rehabilitation and sustainable use of salt-affected soils and showing its positive impact on soil health as well as its environmental and socio-economic context

Topics from the Sessions: Integrated soil – water – crop solutions in rehabilitation and management of salt-affected areas

Session 2. Integrated soil – water – crop solutions

- **Moderators:** Mr Ashok Patra, ITPS (part1)
Mr Meisam Rezaei, Vice-chair of INSAS (part II)

Total presentations /session : 9

- **Poster session Theme 2:**

Presentations Context: includes vision and missions from : research institutions; academia; International organizations (ICBA, ICARDA) , National Council for Scientific Research (Lebanon)

----by covering agrolandscapes affected both by dryland salinization (Marocco, Uzbekistan, Lebanon, India, MENA region; Sudan , Ethiopia) – presentations done by Dr. Asad Qureshi; Mina Devkota, Mr. Sharhabil)

- Coastal salinization impact and solutions (lesson learned from Thailand; India, China)- Mr, Liu (China) ;Mr Darwish; Mr. Pongwichian

Session 4. Testimonies from the Fields

- Moderators: Mr. Moderator: Mr Sherzod Umarov, FAO (part1)

Mr Francisco Pedrero Salcedo, WASAG (part II)

Total presentations /session : 11

- Poster session Theme 2:

Geographically (as case studies): low-cost and ecologically friendly innovative interventions on salinity management: in other words:

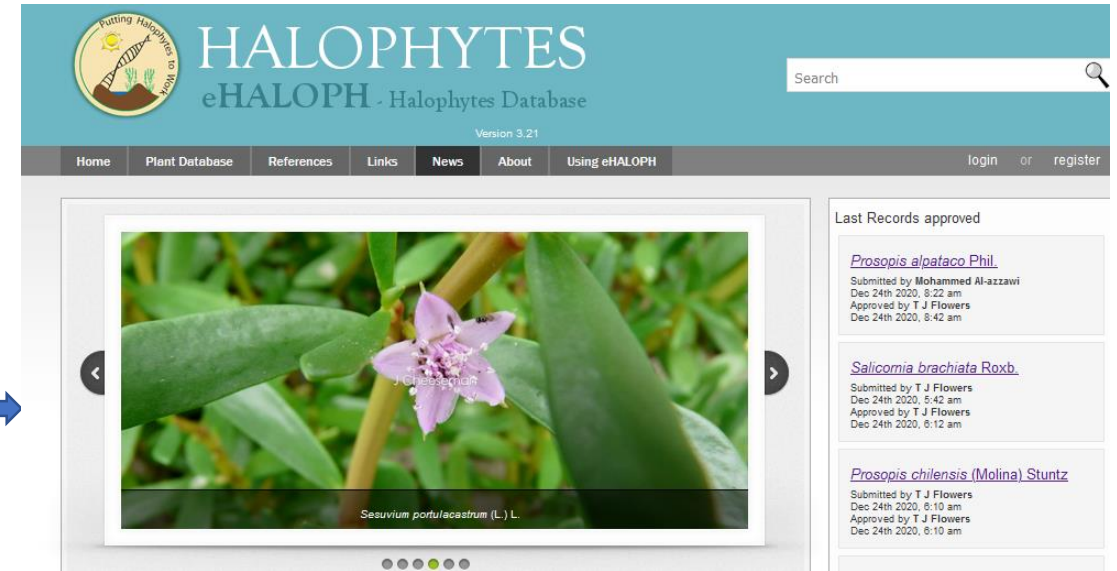
= Success stories/Testimonies from the Fields (we will analyze later on)

Theme 2 (continue)

Special Lectures :

- **Prof. Tim Flower , University of Sussex, Brighton,UK** – relevant /worldwide recognized specialist on Halophytes in senso largo
- Ms. Ludmila Vorotyntseva – inland sodic; saline-sodic salinization in Ukraine - Institute for Soil Science and Agrochemistry Research, Ukraine
(Focal Point/GSP,FAO, Rome)
- Specific interest has been attracted by the presentation done by **Mr Sharhabil Musa Yahaya**, Ahmadu Bello University, Nigeria
(for which I'll pay attention later)
- Audience was much impressed ---organic soil amendments-----

Outcomes:



Audience addressed numerous questions

KEY Constraints Gaps/Needs

What was in Common?

- Water intensive pre-season leaching to ameliorate saline soils
- Water scarcity/Pollution (Multi-Factors Dimensions)
- Non-optimized irrigation system & Alternative Use of Water Resources <
- Problems of salinity are complex and needs different solutions (low Innovations/Investments)
- Small Niche for Halophytes and NNC
- Few livelihood opportunities
- Lack of knowledge/Farmer Awareness /Trainings
- Value added chain and Economics Land Cost Analysis
- Lack of markets

Climate Change and Droughts Cycles

Success Stories from the Field/and best /Approches /practices other techniques reducing water evaporation

Salt –Affected Soils Reclamation



- Technical and engineering interventions: Cut-Soiler Drainage Technology (Patent –JIRCAS) –presented by Mr. Narjary , Central Soil Salinity Research Institute, India;

Gravel Mulches – Mr Farhad Khorsani , Iran ; Samvel Sahakyan, Armenia

Mulches
Residue incorporation
Residue retention
Gravel mulch

To which Scale?



Mr . Musa, Nigerian cases tudy
Application of rice husk and rice straw -

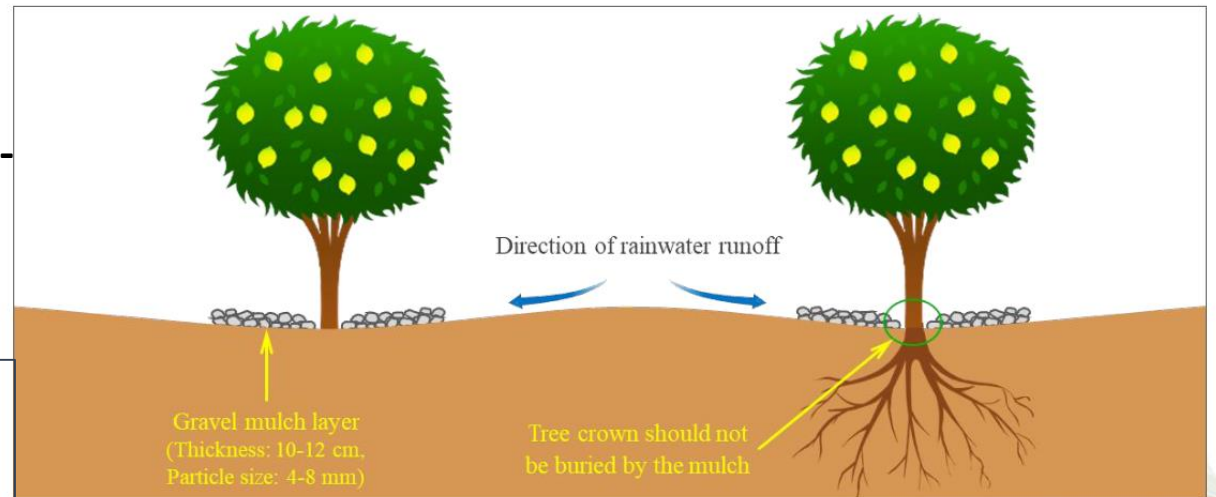


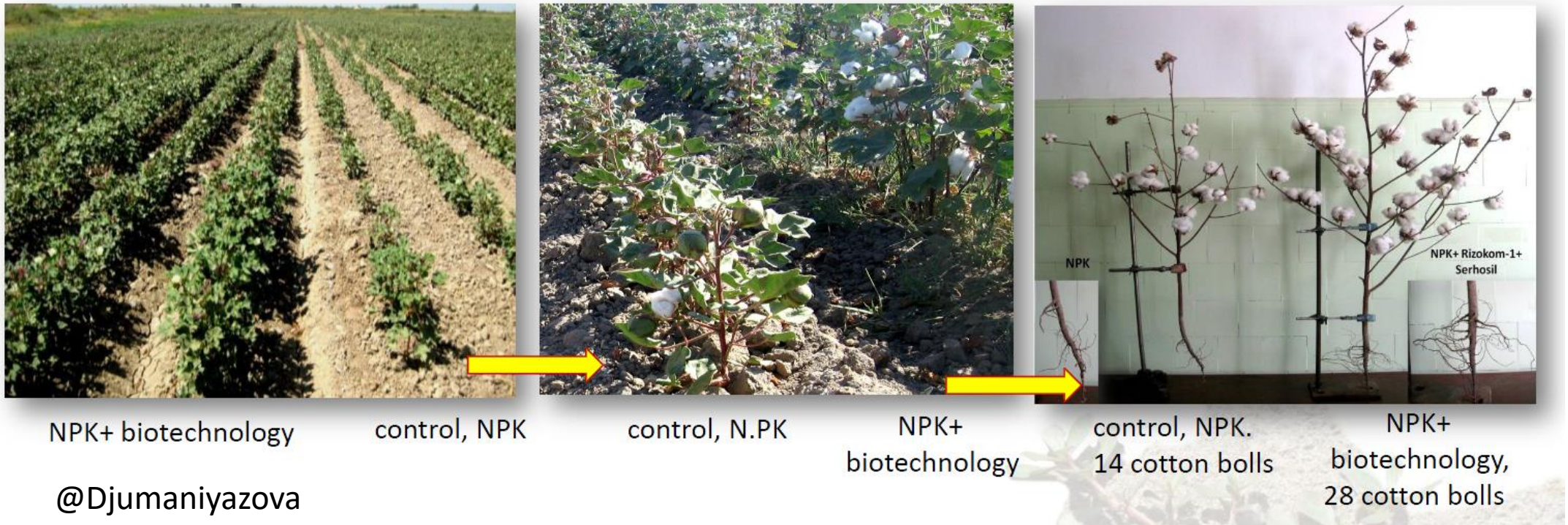
Figure 2. Placement of gravel mulch around the tree, and shaping the orchard floor.

- Irrigation schedule adjustment, gypsum amendments, land shaping, land leveling are recommended as good practices for salt-affected soils



Nature-based solutions are a key in managing salt-affected soils sustainably

- Phytoremediation
- Improved crop rotations and diversification of cropping systems
- bioinoculants



WAYS FORWARDS -

On the top:

Global Network on Halophytes Documentation and Neo-Domestication

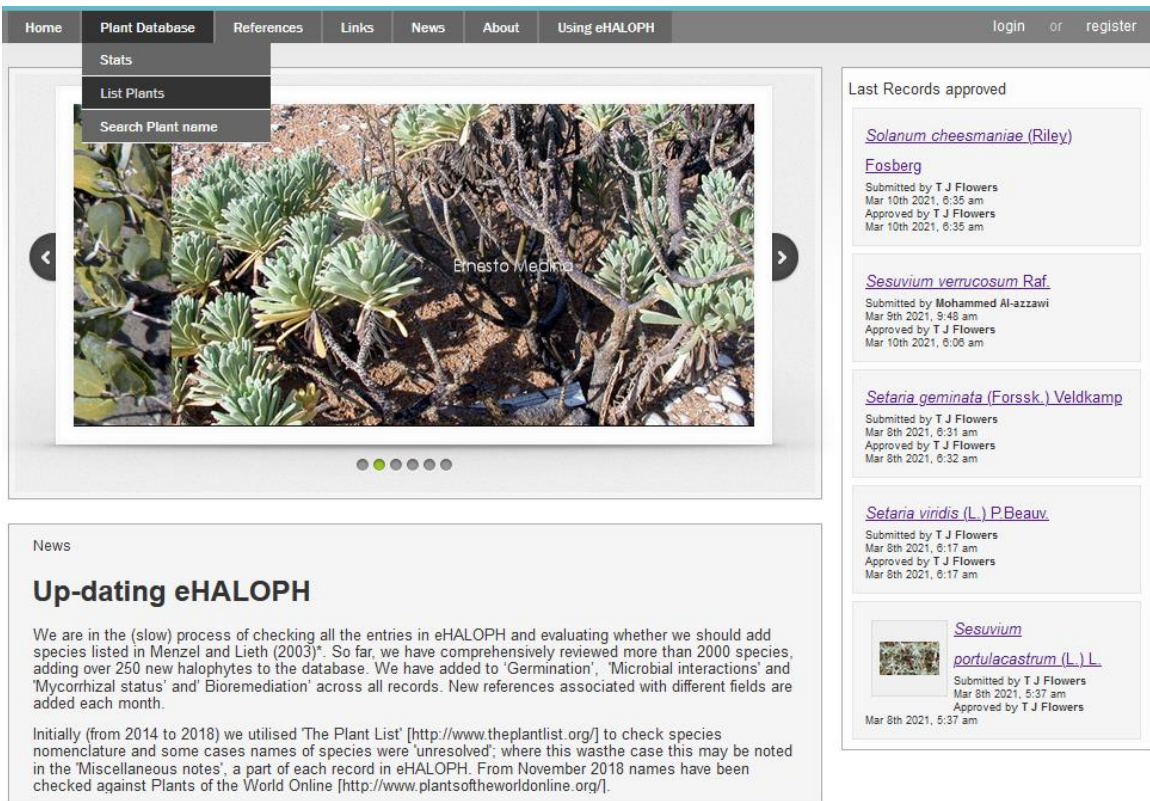
eHALOPH

Halophytes & NCC holds excellent promise for degraded/salt-affected areas

Agrobiodiversity Mainstreaming from Salt Affected Lands

Germplasm Exchange – International Nurseries

- Crop Diversification, Biofortification and Biotechnology
- Evaluation and Adoption a wider range of germplasm a new sources of variability for enhanced grain yields;
- Advanced Breeding and Genetic Engineering (Mr Charu Lata , India)



The screenshot shows the eHALOPH website interface. At the top, there is a navigation menu with links for Home, Plant Database, References, Links, News, About, and Using eHALOPH. A search bar is located in the top left corner. Below the search bar, there is a large image of a plant, identified as *Ernesto Medina*. To the right of the image, there is a section titled "Last Records approved" which lists several records with their respective authors and submission dates. The records listed are:

- Solanum cheesmaniae* (Riley) Fosberg, Submitted by T J Flowers, Mar 10th 2021, 6:35 am, Approved by T J Flowers, Mar 10th 2021, 6:35 am
- Sesuvium verrucosum* Raf, Submitted by Mohammed Al-azzawi, Mar 9th 2021, 9:48 am, Approved by T J Flowers, Mar 10th 2021, 6:06 am
- Setaria geminata* (Forssk.) Veldkamp, Submitted by T J Flowers, Mar 8th 2021, 6:31 am, Approved by T J Flowers, Mar 8th 2021, 6:32 am
- Setaria viridis* (L.) P Beauv., Submitted by T J Flowers, Mar 8th 2021, 6:17 am, Approved by T J Flowers, Mar 8th 2021, 6:17 am
- Sesuvium portulacastrum* (L.) L., Submitted by T J Flowers, Mar 8th 2021, 5:37 am, Approved by T J Flowers, Mar 8th 2021, 5:37 am

Below the records, there is a "News" section titled "Up-dating eHALOPH" which contains text about the process of checking and evaluating entries in the database. The text states: "We are in the (slow) process of checking all the entries in eHALOPH and evaluating whether we should add species listed in Menzel and Lieth (2003)*. So far, we have comprehensively reviewed more than 2000 species, adding over 250 new halophytes to the database. We have added to 'Germination', 'Microbial interactions' and 'Mycorrhizal status' and 'Bioremediation' across all records. New references associated with different fields are added each month. Initially (from 2014 to 2018) we utilised 'The Plant List' [http://www.theplantlist.org/] to check species nomenclature and some cases names of species were 'unresolved', where this was the case this may be noted in the 'Miscellaneous notes', a part of each record in eHALOPH. From November 2018 names have been checked against Plants of the World Online [http://www.plantsoftheworldonline.org/]."

Theme 2 and Testimonies: *overall OutPuts*

Around **60 good practices** and integrated approaches were presented during oral and poster presentations

They will serve as a basis for the database on Good practices for sustainable management of salt-affected soils (once revised by INSAS, SAS&SSM working group);

Organic matter amendment is a good solution for increasing productivity of salt-affected soils. However, in drylands and low-income regions, this resource is usually not available for soil purposes, and the feasible solutions shall be found

...Multiple uses (food, feed and forage) and high nutritive value make quinoa an attractive option for agri-business development



Political and policy interventions

As a key Issues

Policy framework and interplay of relevant institutions in Drylands Countries in the context of Survey, Documentation and Use of Underutilized Water and Plant Resources;

• Empowering Rural Agricultural Communities, especially Women – new education tool to diversify their incomes and Linking smallholders to markets

- Integrated Pest Management Control (IPM)***
- Intellectual Property***
- Women Empowering***
- Improve and extend extension services to remote farmers**