Native Plant Research at the Kuwait Institute for Scientific Research (KISR)

Native vegetation is irreplaceable, as it sustains life on earth. Besides, reflecting the cultural heritage of a nation, it provides sustainable benefits to the society. Native vegetation provides low-cost feeds for livestock grazing, a source of valuable gene pool for research and development, a source of medicine for meeting primary health needs in several countries, and a source of organic substance to the soil. Unfortunately, overexploitation of natural resources, including native vegetation has been, and is still, very destructive and the planet Earth will not be able to sustain the present rate of destruction. Omar et al., (2007) classified Kuwait's terrestrial ecosystem into six groups, namely, coastal plain and lowland ecosystem, desert plain and lowland ecosystem, alluvial fan ecosystem; escarpment; ridge and hilly ecosystem; wadi and depression ecosystem; and burchan sand dune ecosystem. Each of these ecosystems has a dominant species and several associated species. Kuwait is the home of nearly 374 plants species, which includes 256 annuals, and 83 herbaceous perennials. Shrubs and under shrubs are fewer in number (34 species), whereas only one tree is native to Kuwait. Kuwait's native vegetation is of enormous scientific value, because it represents a transition between semi-desert and desert vegetation. Besides, several of them serve as valuable indicators of human induced changes on vegetation pattern; and contain valuable genes for heat, drought, and salt-tolerance research.

While overgrazing is one of the major factors that has contributed to the loss of vegetation in Kuwait in the past. Other factors have also adversely affected the vegetation's natural recovery from negative impacts. These factors include the nature of substrate, soil compaction, unpredictable rainfall pattern, and lack of seeds in the soil. The Iraqi occupation of Kuwait and subsequent military activities worsened the situation further, resulting in a significant loss of native vegetation cover, disruption of natural plant succession process, widespread soil compaction, contamination of surface and subsurface soils with chemical pollutants, and changes in physical and chemical soil properties. Natural recovery of native vegetation under harsh climatic conditions is extremely slow, requiring 40 – 30 years even under moderate soil moisture's availability, and microclimate. Therefore, evident ongoing degradation trend in terrestrial ecosystems, and restoring native vegetation in degraded areas, are major challenges faced by Kuwait. Large-scale revegetation programs, and close monitoring of natural processes would be crucial to address this challenge.

KISR has been conducting studies over the past several years to understand the ecology and dynamics of native plant communities in their native habitats. KISR's researchers have also been evaluating various revegetation techniques and strategies for restoring native plant species in degraded ecosystems. The major scope of KISR's current native plant research is on proper documentation, and conservation of terrestrial ecosystems. This scope of research also involves systematic molecular and genetic characterization, while at the same time, continuously monitoring the functioning of damaged terrestrial ecosystems. Due to the positive outcome of these research efforts, significant opportunities are available for the establishment of large-scale revegetation program in the country. In addition, KISR is exerting efforts to develop efficient techniques and strategies for ecological management, and the restoration of degraded ecosystems, and establishing vibrant partnerships with international organizations specialized in ecosystem restoration.

Omar, S. A. S., Y. Al Mutawa and S. Zaman. 2007. Vegetation of Kuwait. Kuwait: Kuw;ait Institute for Scientific Research, pp 159.

OPENING CEREMONY PROGRAM

08:00 – 09:00 **Registration**

09:00 – 09:05 **Recitation of Holy Quran**

09:05–09:20 **Patronage Speech**
Minister of Education and Minister of Higher Education

09:20 – 09:30 **Opening Remarks**
Dr. Samira A. S. Omar
DG/KISR and Chairperson/Advisory Committee

09:30 – 09:40 **Opening Remarks**
Engr. Naheel Al-Abdulrazzaq, Secretary General
Kuwait National Focal Point

09:40 – 09:50 **Opening Remarks**
Dr. Khaled A. Mahdi, Secretary General
Supreme Council for Planning and Development

09:50 – 10:00 **Opening Remarks: A Global Network for Native Seed in Restoration**
Prof. Kingsley Dixon, President/INSR, Curtin University, Australia

10:00 – 10:10 **Awards & Recognition of Sponsors**

10:10 – 10:30 **Inauguration of Exhibition and Open Day Activity**

10:30 - 11:00 **Reception**

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Workshop Program

09:30 -10:00 **Presentation**
KISR Research and Development activities on Biodiversity Conservation and Environmental Preservation.

Venue: Al-Manhal Hall

Ms. Laila Almulla, DAEP/KISR
Mr. Omar Al-Saeed, DAEP/KISR
Ms. Bashayer Al-Doaej, BT/KISR

10:00 -12:00 **Inauguration of Workshop**
H. E. Minister of Education and Minister of Higher Education

Venue: Main Building Reception Area

Activities for Children

- *Identification of Seeds and Planting Native Plants.*
- *Demonstration on some Kuwaiti wildlife animal at Scientific Center Booth.*
- *Visit to "Q8 - owl Group" Booth and Photo Opportunity with Owls.*
- *Visit to Other Booths for Building Environmental Awareness*
- *Drawing Competition and Distribution Prizes to Winners.*

12:00 -12:30 **Distribution of Certificates to Participants.**
Lunch

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Keynote Speakers	
Sr. No.	Speakers
1	Prof Kingsley Dixon Professor and Director, ARC Centre for Mine Site Restoration, Curtin University, Western Australia
2	Dr. Nancy Shaw Research Botanist, US Forest Service Boise, ID 83709 USA
3	Dr. Candido Galvez-Ramirez. Semillas Silvestres, Cordoba, Spain
4	Dr. Elsa J. Sattout Program Specialist | Ecological & Earth Sciences UNESCO Regional Bureau of Science and Technology Bub for the Arab States Cairo, Egypt
Invited Speakers	
Sr. No.	Speakers
1	Dr. Turki Al-Turki, King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia
2	Dr. Ali El-Keblawy Department of Applied Biology Sharjah University, Sharjah, UAE
3	Dr. Elsayed M. Elazazi Department of Agric. Research Ministry of Municipality and Environment Doha, Qatar
4	Dr. Ali Hussein Al-Lawati Oman Animal & Plant Genetic Resources Center Muscat, Sultanate of Oman
5	Dr. Karma Bouazza Lebanon Reforestation Initiative Beirut, Lebanon
6	Dr. Sabina Saifan National Center for Agriculture and Research and Extension Jordan
7	Dr. Karim Omar Nature Conservation Sector (NCS), Egyptian Environmental Affairs Agency Cairo, Egypt

8	Prof. Mustafa Elhag National Center for Research Khartoum, Sudan
9	Dr. Taleb Mohammed Sghir Département de Botanique et Ecologie Végétale Institut Scientifique, Université Med V-Agdal, Rabat, Maroc
10	Dr. T. S. Rana National Botanical Res. Institute Lucknow, India ranats@nbri.res.in
11	Dr. Mohammad Zahir Khan Commission on Ecosystem Management (West and Central Asia) International Union for Conservation of Nature
12	Dr. Chaieb Mohamed, Professor Department of Biology, University of Sfax, Sfax, Tunisia
13	Dr. Nawfal Abdul Ameer Basra University, Basra, Iraq
14	Prof. Dr. Latif Kurt Biology Department, Ankara University Ankara, Turkey

International Symposium and Workshop on
Native Seeds in Restoration of Dryland Ecosystems

November 20-23, 2017

Registration Form

Full Name: .....

Job Title: .....

Organization: .....

Address: .....

.....

Tel. (Office): .....

Tel. (mobile): .....

Fax No. .....

Email: .....

Intend to: Present a paper ☐ Participate ☐

If presenting a paper:

Tentative Title of the Paper: .....

.....

.....

Complete the Registration Form and send it to the following e-mail address:

isnsrde@kisr.edu.kw

or

The Environment and Life Sciences Research Center
Kuwait Institute for Scientific Research
P. O. Box 24885 Safat
13109 Kuwait

PROCEEDINGS

Full text papers of approved presentations in various sessions will be edited, published, and distributed during the symposium. Selected papers, approved by the Scientific Committee, may be published in a refereed journal (Restoration Ecology).

All correspondences concerning the symposium should be addressed to:

Dr. Faisal Taha
Chairperson, Organizing Committee
KISR-INSR (SER)International Symposium and Workshop
on Native Seeds in Restoration of Dryland Ecosystems
The Environment and Life Sciences Research Center
Kuwait Institute for Scientific Research
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or

Dr. N. R. Bhat
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Snapchat: kisrofficial
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KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH

KISR and The International Network for Seed-based Restoration (Society for Ecological Restoration)

International Symposium and Workshop on Native Seeds in Restoration of Dryland Ecosystems

November 20-23, 2017

The State of Kuwait

SER SOCIETY FOR ECOLOGICAL RESTORATION
INTERNATIONAL NETWORK FOR SEED-BASED RESTORATION

KFAS
مؤسسة الكويت للتقدم العلمي
Kuwait Foundation for the Advancement of Sciences

Kuwait National Focal Point

INTRODUCTION

Kuwait's native flora comprising 256 annuals, 83 herbaceous perennials, 34 shrubs, and one tree species are of significant scientific value. They contain genes that impart resistance to major abiotic stresses, such as drought, heat, and salinity. Natural events, such as prolonged droughts, strong winds, dust storms, and unexpected weather conditions contribute to the alteration of the vegetation cover in Kuwait. However, human activities are the most pervasive of all degradation processes. To help put an end to the alarming rate of degradation of terrestrial ecosystems, and the potential extinction of Kuwait's unique flora and fauna, Kuwait finalized its vision for 2035. This vision emphasizes on the development of management strategies for conservation and sustainable utilization of biodiversity. Such strategies focus on developing techniques and facilities for mass production of seeds and desert plants. The Kuwait Institute for Scientific Research (KISR) recognized the need for relevant research to restore degraded drylands, and conducted ecological and restoration research across the country. The Kuwait Environment Remediation Program (KERP), approved by the United Nations Compensation Commission (UNCC), also focuses on the restoration of native plants in damaged areas. This approach provides excellent opportunities to provide cost-effective and applicable restoration solutions, to face the challenges of the extreme desert conditions experienced in Kuwait.

Since Kuwait is now implementing one of the largest restoration programs in the region, covering almost 1670 km^2, it is the right time for bringing together leading dryland restoration scientists and practitioners in a forum. This forum, the first of its type globally, will facilitate capacity building in Kuwait, and contribute to effective restoration of dryland`s ecosystems in other Middle Eastern countries. The "International Symposium and Workshop on Native Seed in Restoration of Dryland Ecosystems" is a dynamic partnership between KISR and the International Network for Seed-Based Restoration (INSR) of the Society for Ecological Restoration (SER).

OBJECTIVES

- Bring together leading experts, policy-makers, and representatives of public and private organizations, to share the latest scientific and technological innovations in the field of seed-based restoration.
- Conduct training workshops; and expand local scientific knowledge on documentation of genetic variability, native seed production, and quality testing. This scientific event also aims to enhance knowledge in the fields of seed certification, seed germination and enhancement, best native plants growing practices, and environmental monitoring.
- Prepare a roadmap for implementing seed-based restoration of dryland ecosystems.
- Strengthen regional and international cooperation in native seed production, and seed-based restoration.

SYMPOSIUM SCOPE

- Keynote presentations by leading international experts.
- Case studies on seed-based restoration from various regions.
- Participants' presentations.
- Poster sessions.
- Training workshops.
- A visit to KISR's Station for Research and Innovation (KSRI), Kabd, and the sites that were severely affected by the Gulf War, gravel quarry rehabilitation sites, and Sabah Al-Ahmad Nature Reserve.
- Panel discussions, recommendations, and strategic framework for future activities in seed-based restoration.

SYMPOSIUM THEMES

- Genetic conservation and DNA banking.
- Collection, processing, and storage of native seeds.
- Biology and ecology of seed germination.
- Latest innovations in improving germination, and seedling performance.
- Precision seed farming, harvesting, processing, and packing technologies.
- Seed quality testing and certification.
- Dryland restoration: Case studies of restoration of damaged ecosystems.
- Coping with climate change in dryland ecosystems.
- International cooperation in seed-based restoration.

INVITED SPEAKERS

30 keynote speakers, who are experts in dryland restoration both within the region, and internationally, will participate in this scientific event. They will exchange ideas/case studies to develop a road map for promoting seed-based restoration efforts in the region.

IMPORTANT DEADLINES

April 15, 2017	Mailing of symposium information (First Announcement).
April 30, 2017	Request for Participation.
May 15, 2017	Contacting international experts/ keynote speakers.
May 31, 2017	Second Announcement (with registration form and information).
May 31, 2017	Finalizing keynote and invited speakers.
August 15, 2017	Deadline for submitting abstracts.
August 31, 2017	Conveying Scientific Committee's approval regarding presentations, and posters.
September 15, 2017	Deadline for submitting revised abstracts.
September 30, 2017	Deadline for submitting documents for visa issuance, and hotel reservations.
September 30, 2017	Deadline for submitting full-text papers of keynote speakers, and approved presentations.
October 31, 2017	Mailing of visa and travel documents.
October 31, 2017	Printing proceedings and symposium publications

The exhibition of The International Symposium and Workshop on Native Seeds in Restoration of Dryland Ecosystems, holds these booths:

جمعية أصدقاء النخلة
Date Palm Friends Society

شركة النخيل للإنتاج الزراعي
PALMS AGRO PRODUCTION CO.

Mr. Naser Al-Azmy
(activist in Kuwait native plants propagation, influencer)

Mr. Aaid Al-Hajiri
(activist in Kuwait native plants propagation, influencer)