

## BOOK OF ABSTRACT

- I. SESSION DESCRIPTION
- II. SESSION PROGRAM
- III. ABSTRACTS

### I. SESSION DESCRIPTION

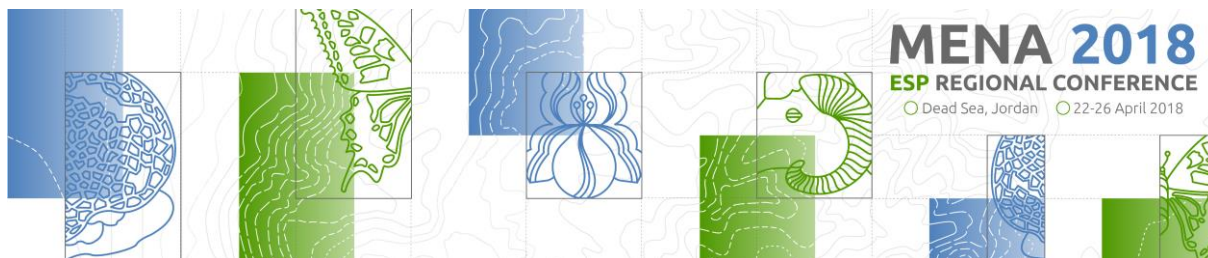
**ID: T1**

**Title of session :**

Ecosystem Services Assessment Frameworks and Typologies across the MENA region

**Hosts:**

	<b>Title</b>	<b>Name</b>	<b>Organisation</b>	<b>E-mail</b>
<b>Host:</b>	Dr.	Oliver Schlein	GIZ	oliver.schlein@giz.de



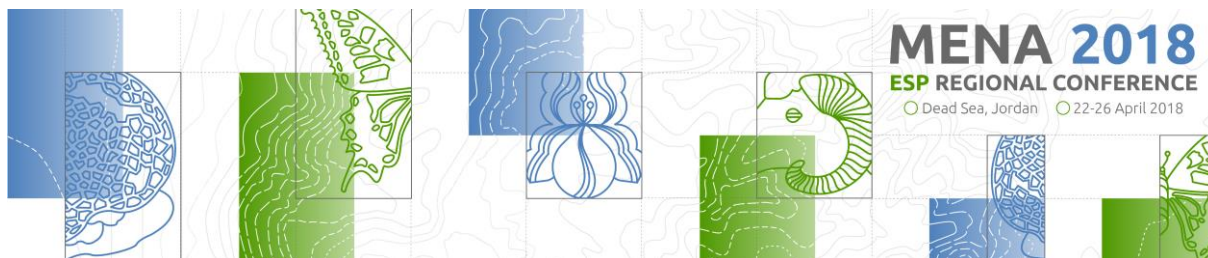
## II. SESSION PROGRAM

**Date of session:** 25 April, Wednesday

**Time of session:** 13:30-15:30

### Timetable speakers

Time	First name	Surname	Organization	Title of presentation
13:30	Oliver	Schlein	GIZ	Introduction to session T1
13:40	Moha	Haddouch	NCARE	Ecosystem Services provided by terraced landscapes
14:00	Ruy	De la Rosa	Starfish Initiatives	Biochar to enhance agricultural ecosystem services: learning from the Biochar for Sustainable Soils (B4SS) Project
14:20	Sobhia	Saifan	NCARE	Species Restoration Through Exsitu Conservation: Role of Native Seeds in Reclaiming Lands and Environment
14:45		General Discussion		



### III. ABSTRACTS

1. Type of submission: *Voluntary contribution*

B. Biome Working Group sessions: B9 Ecosystem services provided by terraced landscapes

## **Biochar to enhance agricultural ecosystem services: learning from the Biochar for Sustainable Soils (B4SS) Project**

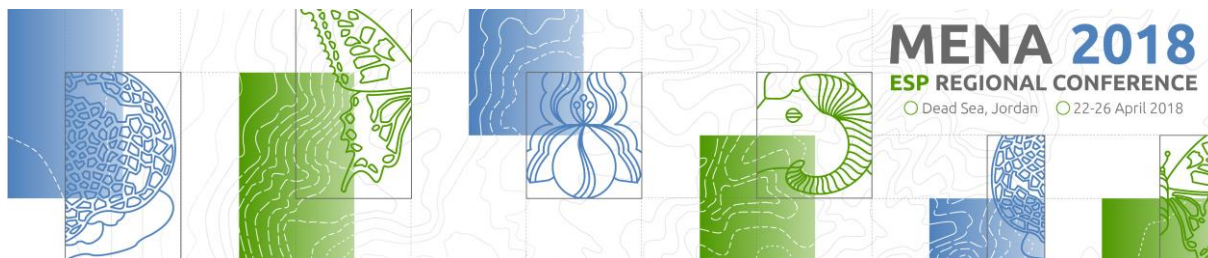
*Authors: Ruy Anaya de la Rosa, Annette Cowie*

*Affiliation: Starfish Initiatives, Australia, NSW Department of Primary Industries/University of New England.*

*Contact: ruy@biochar.international*

Feeding the growing global population is a major challenge, particularly as climate change is expected to increase incidence of climatic extremes. Maintaining soil health is fundamental for improving food security, reducing poverty and preventing conflict. Soils are dynamic ecosystems that cycle life-sustaining nutrients, and serve as the foundation of food production. Soils rich in organic matter increase resilience of agroecosystems to weather-related risks and provide important ecosystem functions, such as storing and regulating supply of water and nutrients, climate-change mitigation, and enhancement of soil biodiversity. Biochar (charcoal used as soil amendment) is proposed as a valuable constituent of resilient agricultural ecosystems. The objective of the Biochar for Sustainable Soils (B4SS) project is to demonstrate and promote adoption of sustainable land management practices involving biochar, that improve the capture and efficient use of nutrients, enhance crop productivity, improve resilience to climate change, and support livelihoods. Funded by the GEF and UN Environment, the B4SS project supports participant organizations in China, Ethiopia, Indonesia, Kenya, Peru and Vietnam to evaluate the effects of biochar formulations on various soils and crops. The effective use of novel biochar formulations has the potential to arrest decline in soil fertility, improve land condition and enhance productivity and resilience of the land resources. Biochar thus could play a major role in enhancing ecosystem services in agricultural landscapes, including land terraces. This presentation summarises current knowledge of biochar and shares achievements and learning from the B4SS project. Following the increased interest in biochar that was generated at the ESP9 meeting in China, this conference provides the opportunity to present biochar to the various groups involved in improving agricultural ecosystem services in the countries of the Middle East– North Africa (MENA) region.

**Keywords:** Biochar, ecosystem services, soil health, food security, sustainable land management



2. Type of submission: **Voluntary contribution**

S. Sectoral Working Group sessions: S8b Plant breeding and native seed preservation: Best practices for maintaining ecosystem services

## Species Restoration Through Exsitu Conservation: Role of Native Seeds in Reclaiming Lands and Environment

*Authors:* Sobhia Saifan

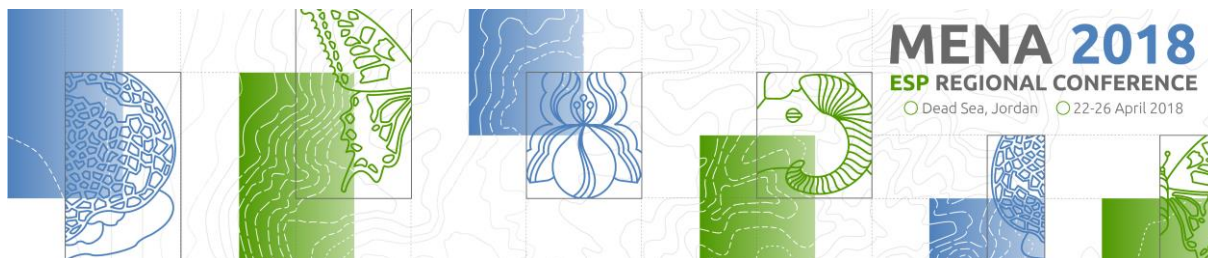
*Other author(s):* Ayed Omary

*Affiliation:* former national Center for agricultural research and Extension NCARE, Jordan

*Contact:* saifan.sabah@gmail.com

Drylands play a vital part in resilient landscapes at multidisciplinary scales. Restoring degraded drylands ecosystems is a key not only for confronting climate change and biodiversity loss, but also for improving direct ecosystem services that support livelihoods. Achieving expected goals of restoration requires careful planning, scientific knowledge, and proper infrastructure. While the success of any ecological restoration efforts depends on several technical issues including assessment of vegetation cover and estimation of diversity index, production of phenology tables, identification of pollinators, collection and conservation of native seeds, tracking and monitoring of restored locations, and estimation of biomass production (kg/ha), integration of local communities in the restoration process is vital for the success of such activities. Local, regional, and international collaborations also play a key role in biodiversity conservation and sustainable management of restored areas. Ex situ conservation of native seeds is an important aspect of ecosystem restoration for supplying seeds for restoration activities. It also reflects the state of biodiversity and ecosystem in the designated restoration site. Ex situ conservation and seed bank in particular, provide important information relevant to native species that are valuable for rehabilitation process and to match local communities needs for improving their livelihood. For example, Jordan gene bank at National Center for Agricultural Research and Extension (NCARE) hosts wild species and also Crop Wild Relatives (CWR) (2058 accessions) such as wild wheat (*Triticum monococcum*, *T. turgidum*); barley (*Hordeum spontaneum*); oat (*Avena* sp); forages (*Medicago sativa*, *Trifolium campestri*, *Trigonella* spp, *Onobrychis* spp., *Lathyrus* spp, and several *Vicia* spp.); wild vegetables (*Brassica*, *Daucus*, *Eruca*, *Allium*, *Asparagus*, *Lactuca*,); trees (*Pyrus*, *Ficus*, *Amygdalus*, *Pistacia*); and medicinal plants like *Teucrium polium* that , those have good potential for utilization in restoration programs in the country.

**Keywords:** Seed Bank, drylands, native vegetation, diversity index, climate change, international collaboration.



3. Type of submission: **Voluntary contribution**

## **Ecosystem services provided by terraced landscapes**

*Presenting Author: HADDOUCH Moha*

*Affiliation: former national Center for agricultural research and Extension NCARE, Jordan*

*Contact: Mohaouhamd@gmail.com*

Land terracing is a [distinctive geographic feature](#) of mountainous areas that suffer agricultural limitations due to abrupt relief, arable lands scarcity and harsh climate conditions.

For the last thousands of years, communities of the western Anti-Atlas mountains have used this technique of leveling steep sloping lands into “steps” that serve as planting beds by reducing soil erosion and water loss while improving soil fertility and helping them stick to sustainable agriculture.

Land terracing is often used in lands exposed to severe soil erosion within a 5 to 50% range of slope gradients. It consists of building a retaining wall (igherm), leveling land surface (iguid) and laying out irrigation canals (assarou) where appropriate.

Indeed, these terraces fulfill multiple economical, environmental and cultural functions.

It is the primary function of the terraces. Through supporting agro biodiversity, key to food system for indigenous people.

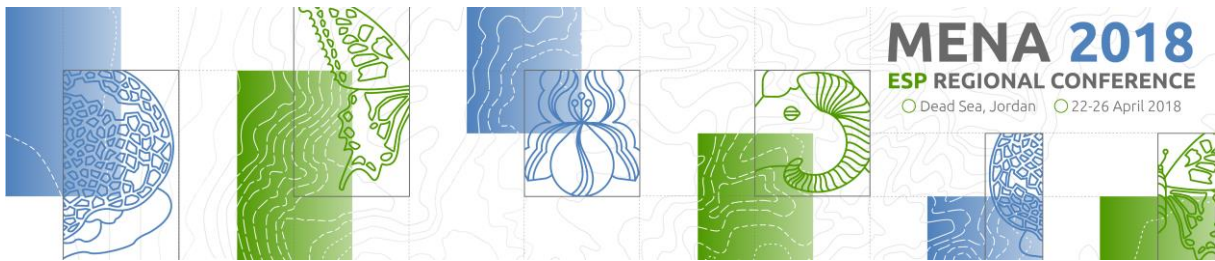
The environmental function consists of providing a flow of ecosystem services including soil and water conservation, water quality improvement, and carbon sequestration.

In the Mediterranean region, it has been shown that terracing 17% of watersheds surfaces reduces runoff by 17% and sediment loads by 40%, allowing a cost-effective flood control and dam siltation reduction downstream.

In fact, at the Souss Massa region, a three-fold decrease in dam silting rates was recorded in managed watersheds compared to those of non managed watersheds. With respect to the cultural function, landscapes of terraces offer a recreation area prized by the tourists. In the Mediterranean region, a willing to pay of an additional value of 20% of the rents was reported. In a similar context in Latin America, investment of a dollar in natural capital provided eco system services of \$10 total economic value.

Despite these vital roles of land terracing, several barriers undermine access to their benefits. Today, nearly 70% of agricultural lands of the Souss Massa Mountains undergo sharp soil erosion and subsequent low productivity, resulting in the abandonment of the agricultural activity and the loss of biodiversity; this situation is exacerbated by mismanagement of customary land terracing practices.

Aware of this situation, and in order to achieve sustainable agricultural growth, the Ministry of Agriculture provides financial support through its Agricultural Development Fund Program to enhance water harvesting systems including land facilities aimed at improving agricultural productivity in the form of terraces, banks or [dry-stone walls](#).



In the future, conservation agricultural terraces should adopt a landscape approach integrating economical, social, cultural and environmental dimensions.

To this end, and in recognition to their vital role in providing ecosystem services, landscapes of terraces should be valued through payments for Eco systemic services.

Last, and with regard to the global benefits of these landscapes, inscription among the Indigenous Community and Conserved Areas network will help strengthen their governance systems and achieve sustainable development goals.