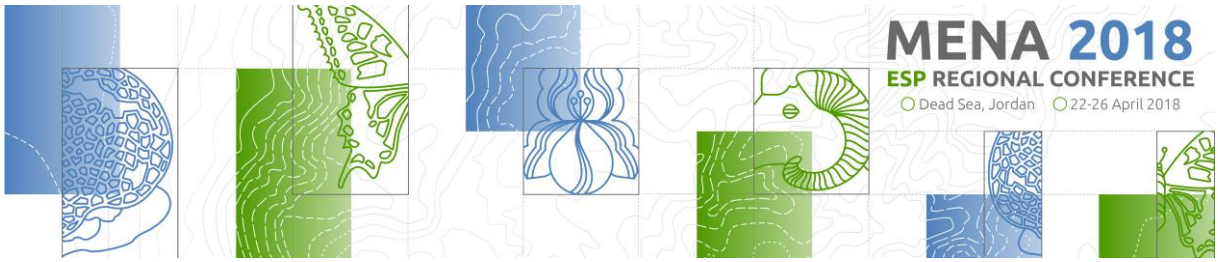

advantages and limitations of the restoration in the context of encouraging long-term sustainability of restoring degraded Badia rangelands in central Jordan.

Keywords: risk assessment, Badia restoration, water harvesting, land degradation, surface runoff

6.Type of submission: ***Poster abstract***

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

Soil organic carbon accumulation in Cactus pear as affected by soil volume

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The impact of soil volume availability on soil organic carbon (SOC) accumulation rate in Cactus pear (Opuntia ficus-indica) in Muchaqqar station in Jordan . In April 2014, 1 year old cactus cladodes were planted in five different size of pots 50, 35, 20 and 5 kg of soil. Three replicates (plants) per pot size were sampled at 0.5, 1.5 and 2 years. The experimental design was a randomized complete block design with three replications (each replication was one plant in one pot size). In each sampling date, samples for the soil were collected from each pot and were 1 mm sieved to determine SOC and carbon isotopic signature δ 13C (‰). Roots were washed carefully separated from mother cladodes areoles, drained of the access water then weighed, root samples were oven-dried at 60 ◦C for 48 h to determine the dry weight. Considering δ13C of cactus pear (-21) and soil used in the trial (-25.4), SOC mean resident time (MRT), mineralization rate and total contribution of cactus pear to SOC stock were calculated. Results showed that the roots dry weight was affected by the soil volume and increased over time, the highest percentage of SOC derived by root was found in the smallest soil volume, while the lowest was found in the largest soil volumes. δ13C of soil showed a progressive increase in relation to sampling date and soil volume. The soil volume affected positively the roots weight for kg of soil, soil carbon and new carbon derived. MRT of new carbon depended on soil volume, ranging from 8 g of C to 4 g of C for year for larger

and smaller soil volume respectively. In conclusion, the soil organic carbon accumulation in cactus pear was affected by soil volume.

Keywords: Carbon isotopic signature, pot size, Opuntia ficus-indica, mean resident time, roots weight

7. Type of submission: ***Poster abstract***

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

Cactus: provision of ecosystem goods, services and function

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The dry areas grow 44% of the world's food and keep half of the world's livestock. Hence, the productivity in these areas can be increased by the cultivation of adapted crops that can thrive in these conditions. Spineless cactus pear (Opuntia ficus-indica) is an ideal candidate that can grow in the driest and most degraded land. Cactus is a multipurpose crop with significant ecological, economic and social potential. However, this crop continue to receive limited scientific, political and media attention. The main objective of this study is to highlight the benefits and ecosystem services generated from cactus pear.. Cactus can play significant roles in the livelihood of small holder farmers. It can be used as fruits for human consumption (8 metric tons of fruit production at 2.000 plant ha-1), as a vegetable crop (80-90 t ha-1 at 40,000 plants ha-1) and as fodder for livestock (25 t ha-1 yr -1). It is the source of wide range of medical products and by- products such as seed oil, cosmetic, industries and processed fruits. Cactus pear can be used for soil and water erosion control, regulation of climate through carbon sequestration and biodiversity conservation. Cacti are also capable of taking up relatively large amounts of CO2 with respect to water loss by transpiration (4 to 10 mmol CO2 per mol H2O, compared to 1 to 1.5 mmol in C3 plants). Consequently, a major shift in the role of cactus pear is necessary, which aims at balancing environmental conservation, farming systems with socio-economic development. Promoting the ecological, economic and social benefits of cacti and strengthening the technical capacity