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Greening the desert: reclamation of wadi Kharrouba at the region of Matrouh in the North Western coast of Egypt

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The North West Coastal zone of Egypt extends 500 km west of Alexandria all the way to the Libyan border. Like most arid and semi - arid regions, the Matrouh region is best characterised by fragile natural resources, extreme water shortages and land suitable for crop production. The formerly nomadic Bedouin agro pastoralist inhabitants of the region commenced settlement approximately fifty years ago and turned to be farmers, but without much experience on farming. The region faces many challenges including population growth and adaption to climate change.

Wadi Kharrouba occupies an area of approximately 7 Ha that in 2013 were totally abandoned and heavy eroded with gullies as deep as 3 metres and large more than 2 m. The rainy season starts in November and ends in March, followed by a prolonged dry and hot season. Rainfall range between 100-120 mm/yr in the torrential form characterised by great intensity over short periods of time, as a consequence water is lost fast leaving behind eroded and devastated landscapes. Soils inside the wadi are deep with a texture ranging from Sandy Clay Loam (SCL) to Clay Loam (CL) with a tendency for clay increase with depth. The clayee nature of the soil is a good prerequisite for water harvesting and conservation. The whole area until December 2013 was almost totally bare of any form of natural vegetation, except for some drought resistant endemic local plants. The surrounding hills are covered with rock outcrops and extensive calcareous surface stones with no soil.

A rural development project called MARSADEV is under way in the area jointly financed by the Egyptian Government and the Italian Cooperation. After two years of project implementation, the whole wadi Kharrouba has dramatically changed. Stone dikes have been built at 75 metres distance along the bottom valley to assure water harvesting and control erosion, semicircle (half moon) terraces are under way on the surrounding slopes to be planted with native plants like Opuntia ficus-indica, Medicago arborea, Atriplex spp, and Moringa oleifera. A reservoir has also been built to collect rain water and provide supplementary irrigation water by gravity during the long hot summer season. In the Spring 2016 figs and olives will be planted and the whole area will be given to local Bedouin communities for management. Legume intercrops (cover crops) will be planted in between the trees to control surface water flow and improve soil fertility. Results so far are astonishing and wadi Kharrouba has the potential to become a regional site of research in pedology, hydrology, soil fertility management, biodiversity conservation, sustainable land management, thanks also to the state of art instruments that have been established in the wadi. Moreover, it is a very good example of a concrete action towards implementing the Land Degradation Neutrality initiative promoted by the United Nations Convention to Combat Desertification (UNCCD).