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## POTENTIAL OF BIOSALINE AGRICULTURE FOR CLIMATE CHANGE ADAPTATION AND POVERTY ALLEVIATION IN THE JORDAN VALLEY

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### ABSTRACT

Jordan is a young, developing and aspiring nation but one of its main challenges is the scarcity of conventional resources of both water and energy. The water shortage in Jordan is attributed to its climate as part of the Middle East. Other factors adding to the problem are a high growth rate, expanding industries, urbanization, flood of refugees, climate change and inadequate integration of water, agriculture, energy, environmental and socio-economic policies.

Marginal lands and high-salinity water are perceived as a strategy option for biosaline agriculture in the Jordan valley. Fresh Yarmouk river water, brackish ground water and treated wastewater are available resources in this semi-arid area of Jordan. Historically, water authorities adopted the blending of fresh and saline water for irrigation, but salts have been accumulating in the top soil due to limited precipitation and leaching. Biosaline agriculture is proposed as part of a new paradigm to better manage water, agricultural, and socio-economic resources in this important and unique ecosystem.

Considering the available brackish ground water resources, treated effluents and cultivable saline lands, biosaline agriculture can be introduced especially in land zones of high salinity. Cash crops such as palm trees which are salt tolerant yet of high economic value should be considered. Vegetables such as salicornia which is known to be very salt tolerant should replace sensitive crops to soil/water salinity.

Three halophyte plants were demonstrated to be successful in bio-reclamation of a saline sodic soil in Ghor Al-Safi at the southern Jordan Valley about 10 km south of the Dead Sea (Al-Naser, 2009). The three halophytes are: *Tamarix aphylla* L, *Atriplex numularia* L., and *Atriplex hallimus* L.

This paper provides an assessment and framework for biosaline agriculture as part of future strategy for water and land management in the Jordan Valley.