



Assessment and optimizing of traditional rainwater harvesting technique “Jessour”: Case study of the sub-catchment of El Jouabit, Southeast of Tunisia

Ines Gasmi and Mohamed Moussa

Institute of Arid Regions, Eremology and Combating Desertification, Medenine, Tunisia (gasmi-ines@hotmail.fr)

Southeastern Tunisia is characterized by an arid Mediterranean climate, with low annual rainfall ranges between 100-200mm, irregular in time and space, stormy and violent with an intensity that exceeds the 100 mm/h for 5 minutes.

The current situation of water resources and their uses in the southeast of Tunisia presents some stakes that are common to many regions of the Mediterranean basin. Limited water resources are widely used to meet the growing need and increasing commodification of resources, which required the implementation of techniques for the valorization of runoff water with the protection of downstream villages from floods. There are several traditional and modern of rainwater Harvesting (RWH) techniques. But, the most useful in the Mountains of Matmata is the "Jessour".

During exceptional rainfall events, the jessour know significant damages that require the study of their status and more precisely the evaluation of the overflow phenomenon and the determination of the standard structural dimensions that meet the study area characteristics (pedological, hydric, climatic...). A water balance model (Winjesr) using the field measurement (mainly the height of retention, surface of retention, surface of impluvium, holding capacity and depth of runoff) was applied for 620 small hydraulic units (Jessour). Our finding that in most cases the disproportion between the surface of retention and the surface of impluvium always cause the overflow and the destruction of dykes during exceptional rainfall events. The upstream jessour are the most susceptible to destruction and they are almost all with a spillway type "Masraf". The "Manfas" spillways are the most effective in our case, since they do not have any discontinuity problems with the dyke as in the case of "Masraf", which reduce the risk of destruction in the case of excessive runoff water, but in this case the 'Manfas' must be strengthened to be more efficient.