



Simulating runoff from an area covered by soil contour ridges using a hydraulic cascade model

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Runoff agriculture and rainwater harvesting are well known farming techniques that have guaranteed crop production in the arid zone of Tunisia since ancient times. At present, soil contour ridges (banquettes) are the main water and soil conservation used. Actually about one million ha farming land were protected by this technique. Usually, soil contour ridges are designed for a 10-year return period to reduce runoff and erosion in hill-slope catchments. However, the detailed hydraulic function of this technique is still to a major extent unknown. For this purpose a runoff model was developed to simulate the discharge from an upstream system of several soil contour ridges. The model was validated using experimental runoff. The simulated runoff agreed well with observed discharge. The validated model was used to simulate runoff from a system of one to several soil contour ridges in a cascade from a 10-year rainfall event. Practical conclusions are drawn by discussing the spacing and design of the soil contour ridges.

Key words: Soil surface management, soil contour ridge, discharge, hydraulic cascade.