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Hydrological impact of ants on rangelands soils in Eastern Spain

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From 1989 till 1993 more than 1000 experiments with simulated rainfall and cylinder infiltrometer were carried out in Eastern Spain in order to assess the infiltration process on rangelands. Within this data set 36 experiments were rejected because ant nests and ant pipes were "disturbing" the infiltration process. Fifteen year later the data set has been revised in order to research the effect of ants on the soil hydrology. Simulated rainfall was applied at 55 mm h^{-1} on 0.25 m^2 plots during one hour on rangeland soils. A set of 125 experiments carried out during summer 1991 on soils developed on Cretaceous limestones was selected. Within those 125 randomly selected experiments 18 were affected by ant activities. Ant burrowing resulted in ant nests and ant pipes which encouraged the infiltration rates. The soil surfaces affected by ant burrows resulted in higher infiltration rates and minimal runoff production from rangeland slopes. The wetting fronts drawn after the end of the rainfall showed flows preferentially following the ant nests and pipes. Thus it is demonstrated that ants highly encourage the infiltration process via preferential flow.

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