



Effect of land uses and vegetation cover on infiltration capacity: through field experimentation in three experimental sites in the NE of the Iberian Peninsula.

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Important differences on infiltration rates associated with vegetation cover/land uses changes have been described in previous research (Giertz and Diekkrueger, 2003; Zimmermann et al., 2006; Zimmermann and Elsenbeer, 2008) or in areas affected by changes in tillage practices (Wang et al., 2016). Since the middle of the 20th century, a large area of agricultural land in Spain has been affected by the abandonment of crops (Arnáez et al., 2011; Alonso-Sarriá et al., 2016) resulting in natural colonization of scrublands and forests (Vicente-Serrano et al., 2004).

In this study, we analyzed a high number of infiltration rates from several land uses and vegetation cover situations in three study areas in northern Spain (NE Catalonia, central Ebro Valley and Central Pyrenees), in order to identify the factors that can justify the differences.

The information analyzed was obtained from 195 field infiltration tests, using double ring devices, performed in 20 scenarios. The main objective was to determine the most important factors explaining infiltration variability: land use, vegetation cover, soil and bedrock characteristics, soil moisture and altitude. Data analysis was performed by using different statistical methods: bivariate lineal correlation, ANOVA and Bonferroni multiple comparison tests. Results show that infiltration variability is mainly linked to land use and vegetation cover. Soil moisture conditions do not show relationships with infiltration rates. The interpretation of these results suggests also that the characteristics of the study areas are more decisive than temporal variations of soil water content, although humidity can influence land use to a greater or lesser degree.

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