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Are site characteristics and channel hydro-morphology related with check dam functioning? A case study in México

Manuel Esteban Lucas-Borja[1], Bruno Gianmarco Carrà[2], Demetrio Antonio Zema[2], and Yang Yu[3]
[1]Departamento de Ciencia y Tecnología Agroforestal y Genética, Universidad de Castilla La Mancha, Campus Universitario s/n, E-02071, Albacete, Spain
[2]Department "Agraria", University "Mediterranea" of Reggio Calabria, Località Feo di Vito, I-89122 Reggio Calabria, Italy
[3]Department of Sediment Research, China Institute of Water Resources and Hydropower Research, Peking, China (theodoreyy@gmail.com)

This study presents a comprehensive evaluation of the influence of channel geometry, check dam size, and stream hydrology, as well as site or check dam characteristics including sediment retention capacity and structural conditions of more than 200 check dams recently installed in a large river of Mexico. Analysis was completed using a combination of statistical multivariate techniques (ANOVA and PCA). ANOVA has shown that (i) only check dam material and vegetation cover of the contributing sub-watershed significantly influence check dam conditions and sediment retention capacity, respectively, and (ii) soil type? texture? may play an important role in these check dam characteristics. Conversely, other variables, such as land use and longitudinal slopes of the drained sub-watersheds as well as check dam location have less influence on check dam sediment storage. PCA has provided two derivative variables related to channel dimensions and vegetation cover , thus demonstrating the influence of these watershed? features on sediment retention behind check dams.