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I International Conference on Research for Sustainable Development in Mountain Regions

Book of Abstracts

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Centro de Investigação de Montanha

Embrapa

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Linear erosion in mountain scrublands of North and Centre Portugal: the case studies of Seirós and Corgo gullies

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Gully occurrence is particularly common in the mountain areas of North and Central Portugal, dominantly covered by forests and scrublands. In many of these regions, linear erosion is a very important process, contributing to significant soil loss and land degradation. In rural areas, land degradation may be responsible for limiting the options for territory occupation and development, reducing farmland quality and suitable area. Driven by climatic conditions as long and intense rainfalls, gully formation is related to topographical factors such as hill-slope gradient, length and shape, to physical, chemical and mineralogical properties of the soils. The variety of physical factors associated with gully formation hinders straightforward interpretations and requires well grounded analysis based on local observation. Also, anthropogenic factors significantly contribute to gully formation and development and for the associated soil loss rates. Deforestation, forest fires, overgrazing, vegetation removal, as well as road building, are the most important ones. In most cases, they reduce infiltration and promote runoff water concentration. Two case studies are presented in this paper, aiming at discussing interpretations on gully formation factors and their contribution to soil loss. Both correspond to scrubland over colluvial hill-slope deposits, located in Seirós (Ribeira de Pena, Northern Portugal) and Corgo (Oliveira do Hospital, Central Portugal). Field surveys were performed to assess gully volume and the corresponding soil loss by linear erosion, consisting in measurements of cross-sectional area at regular intervals along the gully, and their integration up to gully cross-sections with less than 900 cm2 area. Samples were taken on gully walls for bulk density (100 cm^3 cylinders). Field surveys also allow the collection of samples for granulometric analysis in the tentative to assert relationship to the gullies geometry and understanding the most significant driven factors in gullies formation.