



Land degradation and erosion control within the Moldavian Plateau of eastern Romania: a case study from Racova catchment

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Land degradation has been recognized as the major environmental threat in the Moldavian Plateau of eastern Romania. The Racova catchment, located in the central part of this area and extending on 32,908 ha, is significantly subjected to moderate-high rates of soil erosion, gullying, landslides and reservoir siltation.

Several methods have been used to estimate land degradation indicators, such as classical research methods (field surveys and mapping, mathematical-statistical processing), present-day methods based on the GIS software, the Cs-137 technique etc. For example, the landslide inventory resulted from data collected during field surveys, interpretation of the 2005 and 2009 aerial orthophotos, exploiting very-high resolution digital elevation model (DEM) based on the topographical plans at 1:5,000 scale, and the visual analysis of products obtained from 2012 LiDAR DEM (slope map and shaded relief images).

The results obtained showed that landslides, in any shape or age, are the most typical degradation processes in the Racova catchment, particularly extending on steep slopes representing north or west looking cuesta fronts, usually. At present, they cover half of the study area and most are inactive. The gullied systems amounting 4% of the catchment area consist of both types of gullies, discontinuous and continuous along valley-bottoms, respectively. In addition, the major role of gully erosion in triggering landslides and high reservoir siltation rate has been considered.

Extensive conservation practices have been deployed over the 70's and 80's, namely: contour farming on arable land (under strip-cropping, buffer strip-cropping and bench terraces), reforestation over 2,000 ha (especially with black-locust on the active landslides), check dams to control gully erosion etc.

Since 1990, two land reforms have been implemented (the Act No. 18/1991 and the Act No.1/2000) and their impact was very marked on soil conservation and crop yields. The major effect of these Acts is the revival of traditional agricultural systems, especially up-and-down hill farming. Under these circumstances the land degradation still remains problematically high in the Racova catchment.