Degraded agricultural terraces, landslides and gullies from Libertatea village

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Terraced landscapes of Romania are the result of recent modifications of agricultural landscapes, being characterized mainly by agro-terraces (as land use) and earth terraces (as construction material) [1]. While some references of pre-roman (Coțofeni Culture – 3000 BP and Iron Age Dacia) and roman agricultural terraces are cited in the archaeological literature, the majority of the agricultural terraces of Romania were built during the Austro-Hungarian conquest of Transylvania in the 19th century or after the World Second War, during the communist regime (1960-1980). Nowadays the terracing is done on small areas in the same approach as during the communist regime [2].

The main purpose of the terraces was to create a flat surface where crops can be grown in good conditions, and to reduce the soil erosion, by decreasing the slope and the length of the hillside. Water conservation was also targeted, the decrease of slope increasing the water retention in soils, on the terrace benches.

The 19th century terraces are mainly bench terraces, while the 20th century terraces are mainly broad-base terraces for hillslopes with slope under 15-20% and bench terraces for hillslopes over 15-20%.

Degradation by the lack of maintenance and change of land use are one of the most important challenges regarding the terraced landscapes of Romania [3].

Soil erosion, landsliding and gully erosion will affect these lands, since the land use and the maintenance are the single measures that can reduce them (in the absence of stone walls and drainage systems).

The mapping of the terraced areas is a must in order to better assess the state of these lands and to be able to propose measures to reduce the degradation of soils and landscapes [4, 5].

The Chișcata upper catchment (locally known as Hârtopul Lupăriei) from the territory of Libertatea and Călărași villages is a representative area for the situation of Romanian abandoned terraced landscapes (Fig. 1), where soil erosion, gully erosion and landslides (Fig. 2, 3, 4) have a continuous dynamic.

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Fig. 1. The Lupăriei Hârtop from Libertatea and Călărași villages: shaded LiDAR view.

Fig. 2. A flow from the Lupăriei Hârtop.

Fig. 3. A translational landslide from the Lupăriei Hârtop.

Fig. 4. Translational slides and flow-slides from the Lupăriei Hârtop.