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## Agrarian landforms in Czechia and their future value

Jitka Elznicová<sup>1</sup>, Johana Vardarman<sup>1</sup>, Jan Pacina<sup>1</sup>, Iva Machova<sup>1</sup>, Jiri Stojdl<sup>1</sup>, Jiri Riezner<sup>2</sup>, and Tomas Matys Grygar<sup>1,3</sup>

<sup>1</sup>Faculty of Environment, Jan Evangelista Purkyně University in Usti nad Labem, Usti nad Labem, Czechia

([Jitka.Elznicova@ujep.cz](mailto:Jitka.Elznicova@ujep.cz); [Johana.Vardarman@ujep.cz](mailto:Johana.Vardarman@ujep.cz); [Jan.Pacina@ujep.cz](mailto:Jan.Pacina@ujep.cz); [Iva.Machova@ujep.cz](mailto:Iva.Machova@ujep.cz); [Jiri.Stojdl@ujep.cz](mailto:Jiri.Stojdl@ujep.cz))

<sup>2</sup>Faculty of Science, Jan Evangelista Purkyně University in Usti nad Labem, Usti nad Labem, Czechia ([Jiri.Riezner@ujep.cz](mailto:Jiri.Riezner@ujep.cz))

<sup>3</sup>Institute of Inorganic Chemistry AS CR, Rez, Czechia ([grygar@iic.cas.cz](mailto:grygar@iic.cas.cz))

Mountane and submontane hilly landscapes, mainly around the borders of the former Czech Kingdom were used for farming just rarely. During the High Middle Ages these remote regions were colonized by mostly German speaking settlers invited by Bohemian King. Their villages were established and agricultural plots were divided into parallelly or fan-like ordered parcels, partially separated by agrarian walls. Parts of the historic settlements were continually used for agriculture for many centuries, sometimes with no problems with soil erosion. The traces of these landscape structures were best preserved around villages, which were not too suitable for farming and thus were not included into process of agriculture collectivization in the second half of the 20th Century. The historical landscape structures has thus preserved mainly in areas of high altitudes, steep slopes, low settlement density. Those areas with the traces, bearers of landscape memory, has been continually swallowed by forest and shrubs regrowth as noticeable in aerial images.

We mapped the preserved historical structures in the region of the Czechia based on the linear non-forest woody vegetation in current orthophotos and by use of topographic map and DTM based on LiDAR mapping. This examination showed a surprisingly large spatial extent of the historical landscape pattern, well framed by woody vegetation. For our study, we used also old maps, archival aerial photographs and digital terrain models created from newly acquired airborne LiDAR imaging. We performed imaging of the wall structures by geophysical means (electromagnetic imaging EMI using a DEMP instrument). We focused particularly on terraced fields and agrarian walls.

The stone walls situated more-or-less perpendicular the slope gradient resulted in nearly terrace-like surface topography. Even in areas with a mean original slope higher than 10° the final slope of the fields decreased to a few degrees. Most agrarian walls were constructed from stones; their bases are usually a bit deeper than current terrain level at the wall foot according to the EMI images. Some walls are higher and wider than 1 m and their upper edge is buried by topsoil washed from upper parts of the fields. The topsoils on the fields have comparable grain size distribution in upslope, middle and downslope parts, showing the minimal net transfer of fine particles by erosion. No traces of deep erosion or soil degradation were observed, which could be attributed to the skeletal character of soils in well-preserved historical terrace fields.

We examined also local plant cover, which showed preservation of meadow species even after reforestation of the former historical settlements and considerable differences in vegetation species composition of the agrarian wall and in surrounding agricultural parcels. A considerable part of the still preserved historical agrarian, may play a positive future role in biodiversity of montane areas by presence of contrasting biotopes, e.g. including tree species more resistant to the global change than widespread spruce monocultures.