

Abstract for the symposium “Rethinking landscape degradation analysis and prevention in agrarian landscapes of Europe and Central Asia” at the IALE World Congress 2015 in Portland/Oregon

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Landscape degradation in Germany and Eastern Poland - Evaluating traditional and modernized agricultural loess regions

This study analyzes the impact of different farming systems on degradation dynamics in European loess landscapes. The analyses are based on geochemical soil properties, landscape metrics, geomorphological indicators and the High Nature Value (HNV) farmland indicator.

The German Middle Saxonian Loess Region represents loess landscapes whose ecological functions were shaped by land consolidation measures resulting in large-scale, high-input farming systems. The Polish Proszowice Plateau is still dominated by more traditional, small-scale agriculture.

The research areas were analyzed on different scales combining GIS, field, and laboratory methods on pedological and botanical aspects. A digital terrain classification was used to identify representative catchment basins for detailed pedological studies which were focused on soil properties that responded to soil management within several years.

Both landscapes show severe but different degradation marks shaped by agricultural practices. In Germany, a decline in landscape structures caused a decrease of HNV farmland. Large-scale plots with long, continuous slopes are the main cause for erosion. But denudation, transport, and accumulation effects are often mechanically managed at one field. It resulted in a homogenization of soil patterns. Additional causes for degradation processes are high inputs of fertilizers and herbicides.

In Poland, small plots and fragmented ownership make it difficult to manage soil erosion. Numerous linear landscape elements function as protective barriers but also cause run-off concentration. Thus, surface water becomes erosive even on short slopes resulting in diversified geomorphology and heterogeneous soil patterns. But landscape elements also counteract landscape degradation by supporting the preservation of HNV farmland.

Keywords: landscape degradation, loess, HNV farmland