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LIMITING FACTORS OF THE SOILS FROM DUMBRAVA, TIMIȘ COUNTY

Andrada VIGH, Diana ȚEȚ, Andrada RANCU, Daniel Dorin DICU, Radu BERTICI
University of Life Sciences "King Michael I" from Timișoara

Abstract: "Limiting Factors of the Soils of Dumbrava Commune, Timiș County" presents the detailed analysis of the main components of the natural environment – soil, water and land – as well as the proposed measures for their conservation and sustainable use, in accordance with the principles of sustainable development. The study is based on data extracted from the geotechnical and hydrogeological study of Dumbrava commune (ICEBERG S.R.L., 2020), integrating information on the geological structure, soil conditions and local hydrogeological regime. The predominant soils are luvisols (47%), gleiosols (24%), planosols (15%) and eutricbosols (9%), characterized by average fertility and susceptibility to erosion, water stagnation and acidification. For their conservation, it is recommended to apply organic fertilizers, drainage, anti-erosion works and afforestation of the slopes.

• Introduction

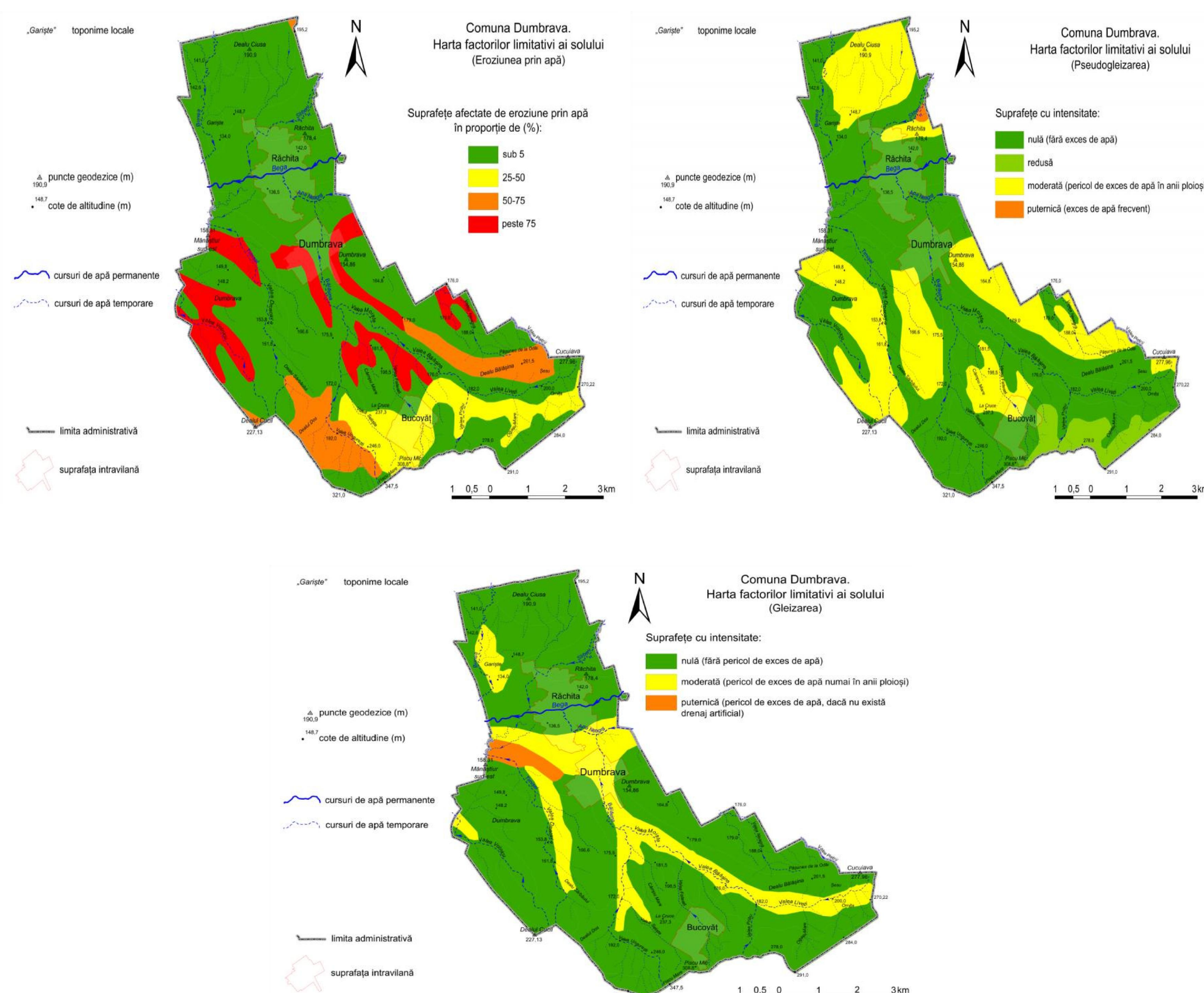
The sustainable management of natural resources is an essential pillar of rural development and environmental conservation. Soils, groundwater, vegetation and forests are fundamental elements of the local ecosystem, playing a decisive role in maintaining ecological balance, sustaining agricultural production and ensuring quality of life. In the context of climate change and increasing anthropogenic pressure, the conservation and responsible use of these resources is becoming a pressing necessity. In this perspective, this paper analyzes the main natural resources of Dumbrava commune – soil, water, vegetation, forests and biodiversity – identifies risk factors and proposes concrete measures for sustainable management. The application of these measures is essential for the conservation of resources, the prevention of environmental degradation and the promotion of a sustainable and resilient rural development model.

• Material and method

For the realization of the study "Limiting Factors of the Soils of Dumbrava Commune, Timiș County," pedological, hydrogeological, climatic and vegetation cover data were used, obtained from official sources, local studies and field observations. Soil data included soil types, fertility, texture and chemical reaction, while hydrogeological information covered groundwater level and quality. This approach allowed the identification of limiting factors, the assessment of the state of natural resources and the substantiation of the improvement and protection measures, necessary for the sustainable use of soils, waters and ecosystems in Dumbrava commune.

• Results and discussions

The analysis of soil limiting factors highlighted three major processes: water erosion, pseudo-glaciation and glaciation.



The results of the study confirm that the natural resources of Dumbrava commune – soil and water – are valuable, but vulnerable. Their sustainable use depends on the implementation of protection and restoration measures adapted to the local specificity. On a practical level, it is necessary to develop local ecological management programs, which include: monitoring soil and groundwater quality, drainage and erosion control works, promoting organic farming.

Conclusions: The study entitled "Limiting Factors of the Soils of Dumbrava Commune, Timiș County" highlighted the close relationship between geological, pedological and hydrogeological conditions and the potential for land use. Overall, the commune of Dumbrava has valuable but fragile natural resources, whose rational use must be correlated with territorial planning and the principles of sustainable development, in order to ensure ecological balance and long-term economic viability.