

Contributions to the presentation of the soil cover in Ghioroc, Arad County, Romania, with modern technology

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Abstract This paper presents the main soil types in the Commune of Ghioroc, Arad County, Romania, using an analogic support. To do so, we first created a database. We individualised the studied area and its actual limits. In determining the number of buildings, we ensured proper precision at a scale of 1:5000 for the non-urban area and 1:2000 for the urban area. We can see that the following soil types have developed and evolved in the Ghioroc area: eutricambosols covering 3,172.63 ha (81,2%), pelosols covering 425.02 ha (10,9%), vertosols covering 155.97 ha (4%), regosols covering 59.72 ha (1.5%), erodosols covering 53.40 ha (1.4%), luvisols covering 37.51 ha (1%) and lithosols covering 4.75 ha (0.12%).

Key words

analogic support,
eutricambosols, pelosols,
vertosols, erodosols,
luvisols, lithosols

The Commune of Ghioroc is at about 22 km from the liminal area of Arad, seat of the Arad County, Romania (Figure 1). It covers 4,890 ha, of which 3,909 ha of agricultural land. Ghioroc was first mentioned in a document in 1135, and it has two component villages: Cuvin and Miniș (Figure 2).

Geology is notable for its wide petrographic variety and its characteristic tectonic structure, which distinguishes between two main units: the plain, made up of Miocene formations covered by lacustrine deposits of the Pannonia lakes; the mountain area, made up of Neogene eruptive associated with crystal shales.

Pedo-genetically, there are two main predominant rocks: sericite-chlorite and calcite.

Material and Method

To carry out this study, we first created a database. We individualised the studied area and its limits.

Cadastral works in the studied area were made with L₁ and L₂ double frequency GPS apparatuses.

To ensure even precision all over the cadastral plan, digitised elements were checked through topographic measurements in the field.

Data regarding the soils in Ghioroc were obtained through cooperation with specialists from the Office for Soil and Agro-chemical Studies in Arad, Arad County, Romania, with hm we made measurements in the field and laboratory analyses to establish the main soil types and their features.

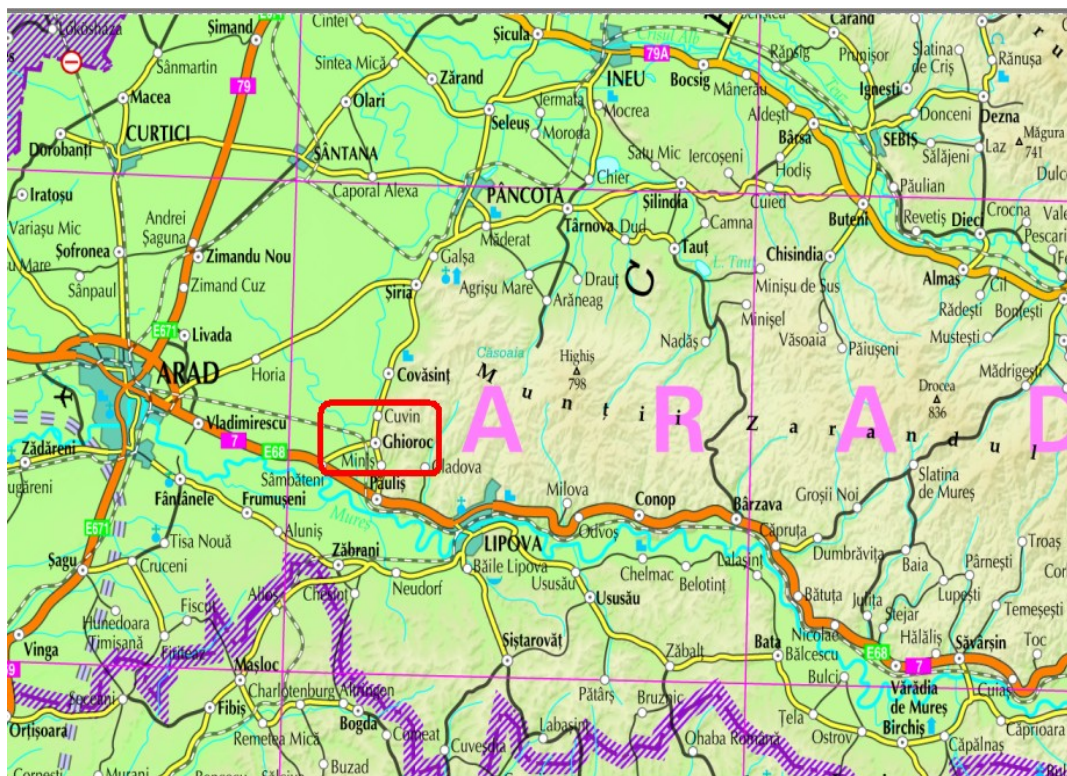


Fig. 1. Location in the area of the Commune of Ghioroc, Arad County, Romania

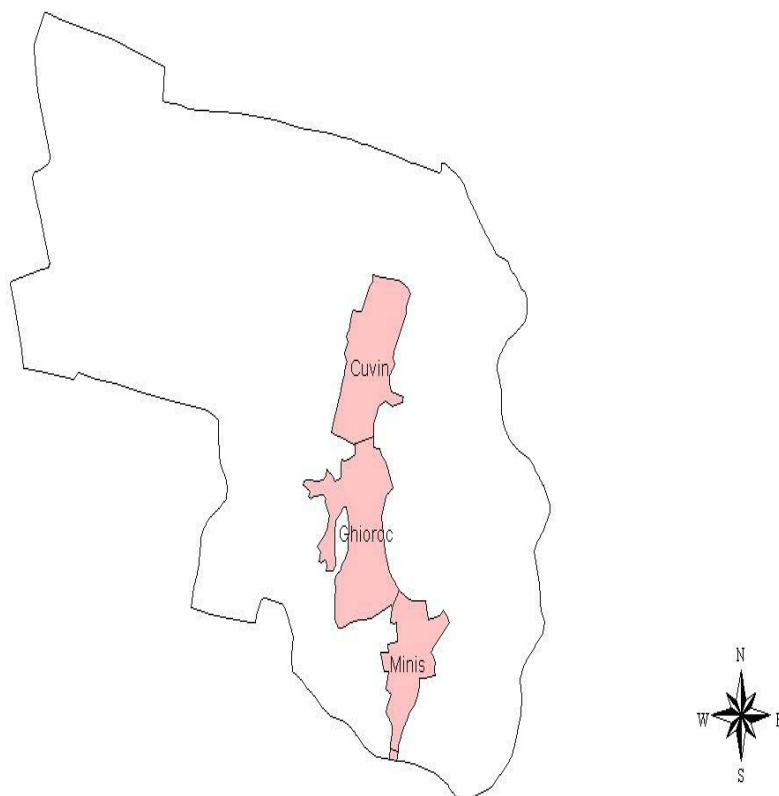


Fig. 2. Administrative-territorial limits of the Commune of Ghioroc, Arad County, Romania

Results and Discussions

The soils in Ghioroc, Arad County, Romania, have the mark of the ancient hydrologic regime: iron-manganese accumulations as spherical concretions. The influence of the water is obvious mainly on slightly negative forms of relief, soils marked by soil inversion, which is due to the heavier soil texture and to the slow inner and outer drainage.

At the meeting point between plain and hills, there are luvisols and Pelosols. In the hill area, the soil formation direction was towards eutricambosols. The evolution of these soils under the characteristic forest vegetation is supported by the presence of forests in the hill area. The time since these forests were partially deforested to make room for agriculture creates conditions for the podzolization of the soils.

In Ghioroc, the normal process of soil evolution was changed because of the cleaning and terracing works made to stop erosion processes after deforestation and the planting of viticulture and fruit culture plantations. Terracing was done on slopes over 15%. The top and the foot of the hills were not terraced but they were cleaned to plant grapevine.

Therefore, under genesis and evolution conditions, the following soil types developed and evolved: eutricambosols covering 3,172.63 ha (81,2%), pelosols covering 425.02 ha (10,9%), vertosols covering 155.97 ha (4%), regosols covering 59.72 ha (1.5%), erodosols covering 53.40 ha (1.4%), luvisols covering 37.51 ha (1%) and lithosols covering 4.75 ha (0.12%) (Figures 3 and 4).

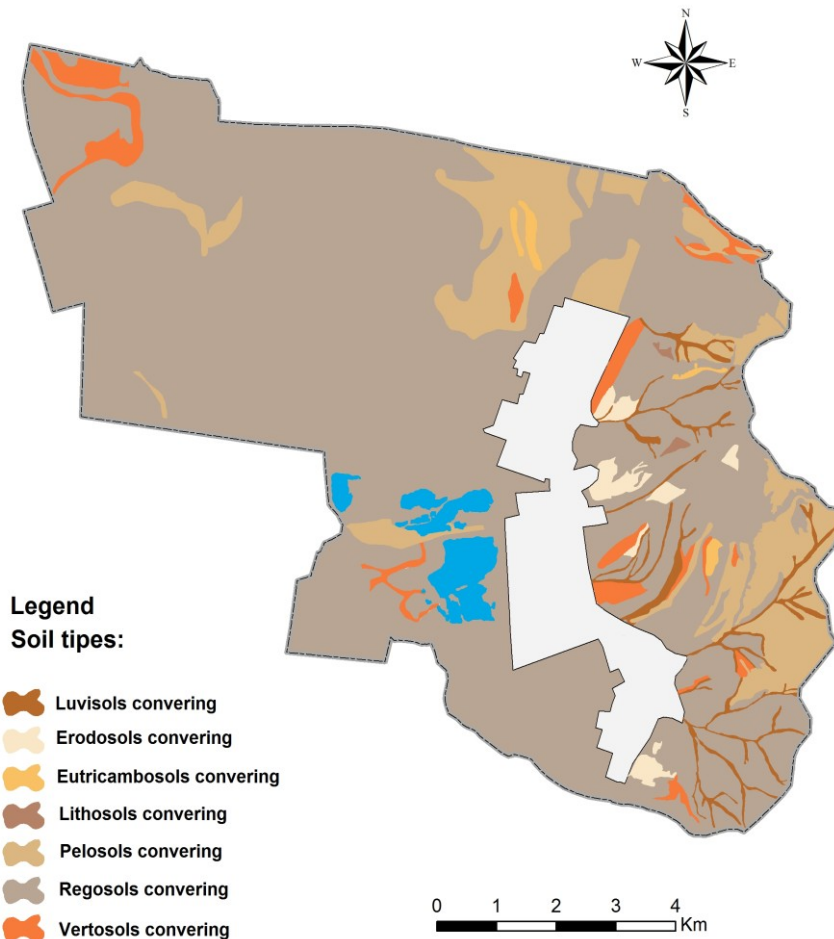


Fig. 3. Map of pedological cover

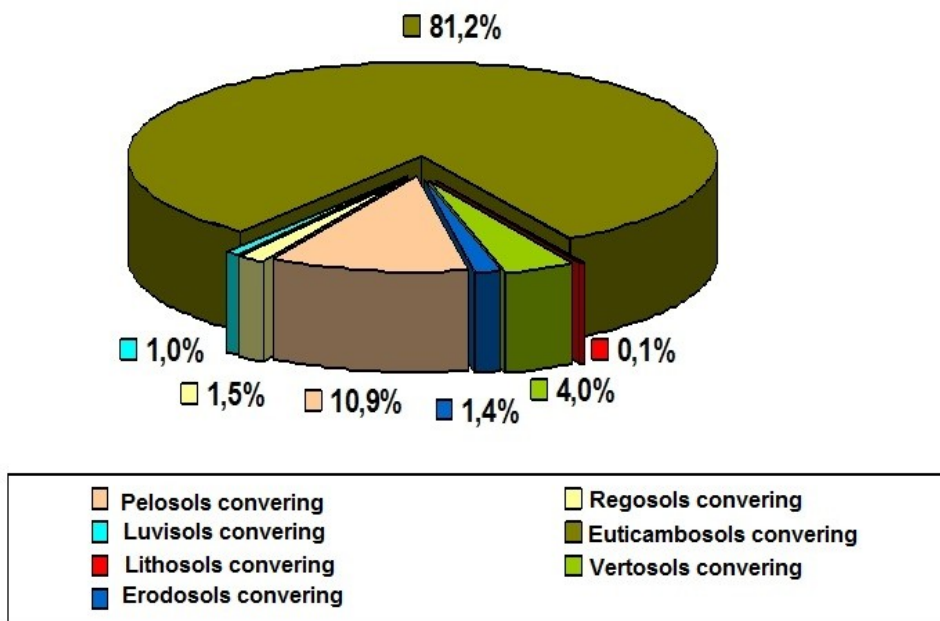


Fig. 4. soils identified in the studied area

Conclusions

GIS allow map representations that show the main soil types in the studied area as well as the area occupied by each of them.

Examining the map, we can see that, in Ghioroc, Arad County, Romania, there are the following soil types: eutricambosols, pelosols, vertosols, regosols, erodosols, luvisols and lithosols.

Knowing the main soil types is important in establishing the main crop types in the studied area.

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