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PEDOGENETIC SOIL ENFRANCHISEMENT OF THE RELICT GETIC PIEDMONT

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Abstract

The soil cover of the Relict Getic Piedmont was formed during its evolution process. In the characteristic pedogenetic conditions, a large group of soils was formed gathered in six classes: protisoils, cernisoils, cambisoils, luvisoils, pelisoils and hidrisoils. The luvisoils are dominant, followed by the cambisoils and hidrisoils.

The limiting factors of agricultural production are different for each subunit. The most spread are erosion and stagnant humidity excess, the high acidity of most soils and also a small humus reserve.

The increase of the fertility potential of the soils implies as main requirements the prevention and stopping of the erosion, elimination of the humidity excess through loosening, limestone adding and ameliorative fertilization (radical).

INTRODUCTION

The ground shell of the Getic Piedmont in general and especially the relict Getic Piedmont were formed in the evolutionary process for millennia. Starting in the second part of the Pleistocene environment, the Getic Piedmont development as a form of relief ended. The next stage of carving was preceded by a period in which most of the territory remained a swamp regime.

Gradually the complex pedogenetic factors change particularly those orographic and edaphic. This makes the hydromorph intensity factors to evolve under the influence of external area, climate and vegetation.

In Wurm 3 and the Holocene increase in the intensity of clay process to determine the bioaccumulation of various stages of evolution that explains the current structure and the area of soil.

MATERIAL AND METHODS

The risk to drought is related to the ability of soil to retain and provide needed water to plants. A ranking of soils in this regard requires specific data processing. Therefore the grouping of soils and land vulnerability report was based on other criteria. We had to view hot-dry climate (average annual temperature is between 10.5-11.5 ^{0}C, the amount that go over 10 °C temperatures of 1500-1800 °C, the

warmest month temperatures frequently exceed 23 °C, and the absolute maximum reaches up to 42 °C, mean annual precipitation below 500 mm and the vegetation period not exceeding 300 mm), soil type and texture (medium and coarse textured chernozems and arenosols), fragmentation of relief, groundwater depth (mid-large, predominantly from 5 m) and salted soil.

RESULTS AND DISCUSSION

The Getic Piedmont is a relict geomorphological relief unit with significant variations from the flat, low lands fragmented by moderately rough with strong fragmentation. Taking into account all these features were particularly morfogeographic geosystems two main units separated by the Olt in the western relict Getic Piedmont, with the subdivision Motrului Piedmont, Olteţului Piedmont and Bălăciţei High Plain and the eastern relict Getic Piedmont, which belongs to Cotmeana Piedmont and Cândeşti Piedmont (Figure 1).

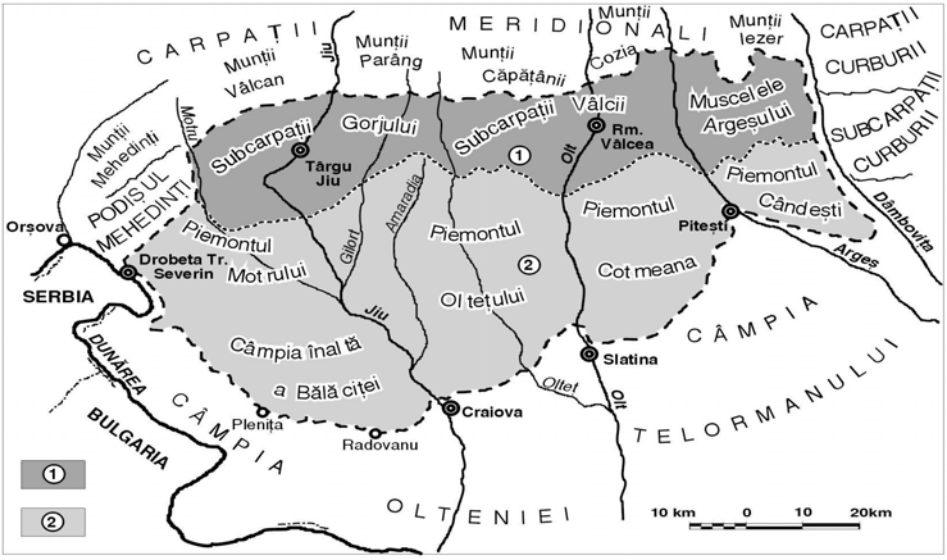

Fig. 1. Subdivision of the Getic Piedmont
1. Getic Piedmont; 2. Relict Getic Piedmont

Geological formations taking part in the composition of Piedmont Getic are phase prequaternary of subsidence and sea-lake and continental semilacuster quaternary phase. The latter, although very short in comparison with the previous phase is more important both for specifying the main stage on the morphogenetic evolution of the Piedmont and in pursuit of becoming the occurrence and geographical components, and particularly as regards training and pedogenetic empowerment of the soil.

During Levantine, the Getic Piedmont was occupied by a lake sedimentation sweetened the relatively quiet was disturbed from time to time the arrival of coarser materials from the mainland, made with a heavy bedding. This phenomenon is increasing, but more towards the end, when you install a fluvial-lacustrine facies, where sand and gravel dominate, which also marks the transition to lower Pleistocene.

In the early Quaternary (Pleistocene lower-villafranchian) levanter lake water continuously regression are clogged with coarse material psamo-psefitic (Cândeşti layer) carried by torrential waters, which came down in stormy Southern Carpathians, affected by movements of lifting the Wallachian phase. The layer thickness of Cândeşti varies between 150-200 m.

Pleistocene begins with a cooling medium increased, announcing production of the alpine glaciation. This climate change area is marked by a slight rain phase, characterized by relatively abundant rainfall. As a result of altered crust materials deluvial and soil-eluvial orogen zone formed by the end of lower Pleistocene are subject denudation and transported to the south by torrential bodies and covers such a thickness of 3-6 m slayers of Cândeşti exceeding Piedmont limits even.
In all probability, during the deposit of sediment clay, worked as the swamp area of the corresponding Getic Piedmont and the Danube River and much of Plain Teleorman, with a relatively rich hydrophilic vegetation. After the amount of organic matter in soil left it appears that this phase did not last too long. S-type soils formed little lakes (Figure 2).

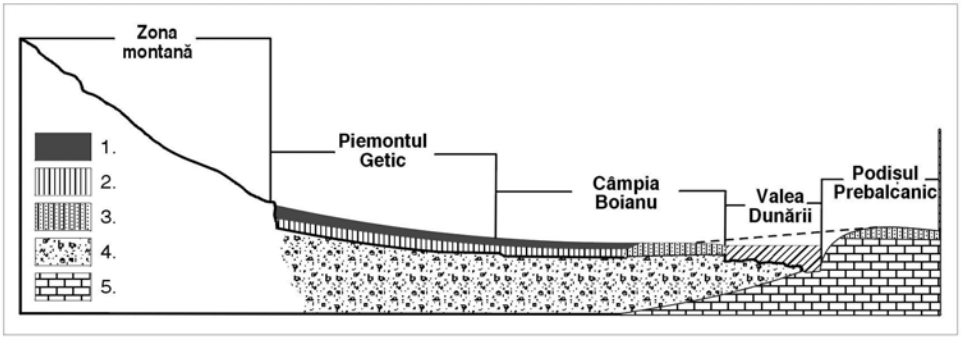

Fig. 2. Genesis and evolution periods of the Getic Piedmont and the soil cover
1. Cernic gleiosoils (little lakes) that became vertosoils (loamy soils or vertisoils); 2. Proluvial loamy deposits; 3. Loessoid deposits; 4. Layers of Cândeşti and Frăţeşti; 5. Limestone.

The Getic Piedmont deposits yellow clays that form of relief cease development and enter the stage of evolution downward, subject factors action modifiers. In this respect, the most active role was played fluviatile erosion system. River bodies that stage training Piedmont played an important role is also being widened (Mindel II)

in their own twin agesters (Jiu, Olt, Argeş) and others (Motru, Gilort, Olteţ, Topolog, Bascov, etc.) slipped on their flanks, and attracted the local areas of subsidence. As the mountains rose (Wallachian phase continued into Quaternary) outline progress south Piedmont detrimental to lake water, record a withdrawal continues south and east.

Parallel to the hightening of the region and achieving overall drainage occur important changes in climate and vegetation. The continentalism increases, becoming ever more pronounced, and instead of hydrophilic vegetation and mesophilic forest installs first highway, then the actual quercinee.

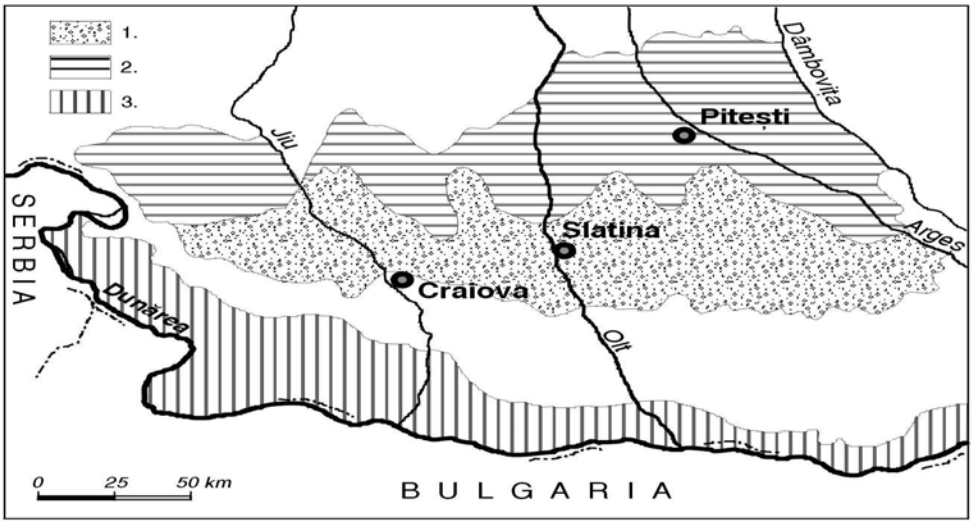

Fig. 3. The spread of vertosols (1) and soils that evolved on them (2); Danubes terraces (3)

The new bioclimatic conditions cernic gleiosoils (little lakes) pass through several stages of pedogenetic emancipation.

Initially, the output from the influence of groundwater, they have evolved largely to vertosoils (smolnas or vertisoils). As a zonal shaping climate and vegetation, much of these soils have entered a new stage of development, the characters retain their legacy only in the area of contact with the field in a space climax, where going north, they have reached the time of luvisoils evolved, namely albic luvosoil (Figure 3).

Because of global defective drainage, locally developed to hidrisoils as stagnosoils. In this respect they have ranging from south to north a dark Bt subhorizon as evidence of trends in vertosoils.

The main physical and chemical features of the two terms from the information are below. Thus, vertosoils have a fine texture, loam (47-51% clay under 0.002 mm),

moderate acid reaction in the upper horizon (5.6-5.7), low humus content (2.4-3.2%) and nature mezobazic (V-71%).

Albic stagnant luvosoils, melanie presented strong differentiated textural (Idt-2.6), are strongly acidic (4.4), have a low humus content (2.6%) and fall within oligobazic soil.

Features of the current ground cover relict Getic Piedmont are determined by about 70% of the territory of high loam of parent material and landform diversity consisting of flat, poorly fragmented by moderately rough terrain. It consists, in luvi-soils order of predominance (55%), with soils occurring cambisoils classes (15%), protisoils, pelisoils (14%), hidrisoils (0.8%) and cernisoils (0.2%) (Figure 4).

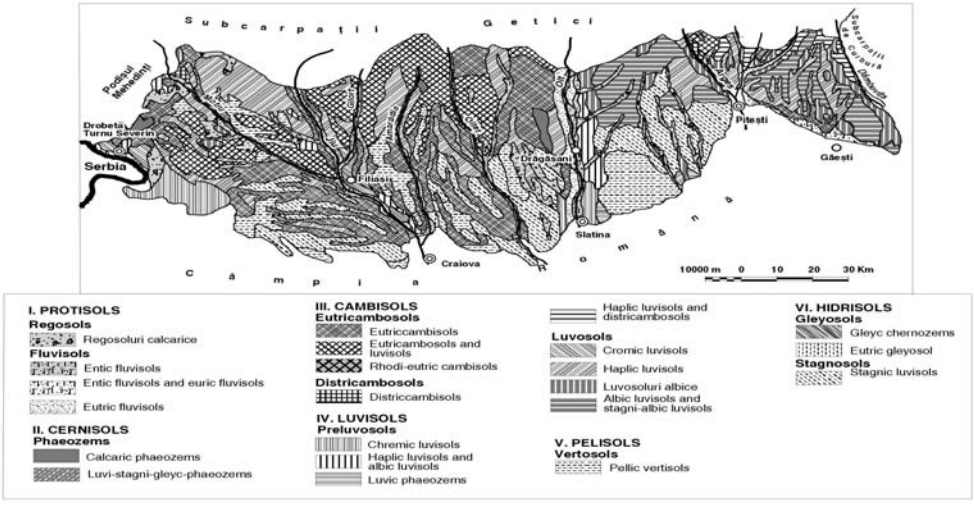

Fig. 4. The relict Getic Piedmont - soil map

The prevailing western relict Getic Piedmont luvisoils (31%) were represented mostly by regosoils (15%) and aluviosoils, as pelisoils type vertosoils (10%). At close range is met red preluvosoils (0.8%) and typical (0.3%), gleiosoils, stagnosoils and even faeozioms class cernisoils.

This section is reported the extent of erosion processes, affecting about 44% of the territory, as excess moisture stagnant.

In the relict eastern Getic Piedmont, covering soil is made up in order of dominance of luvisoils, respectively typical luvosoils, albic luvosoils, including stall (42%), followed by hidrisoils represented by luvic stagnosoils and albic stagnosoils (25%) characteristic of the inter piedmont widely developed. A significant proportion also have the protisoils (19%), with a higher frequency regosoils spread on most slopes. Not missing vertosoils occupying a compact area on the intersaw river.

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Most soils in which we have referred has a fine texture (34-63% clay), sometimes highly differentiated textural, with a medium texture in upper horizons (15-31% clay) and fine-very fine in the lower horizon (48-64% clay), a volume edaphic high (98-100%), moderate degree of compression (5-16%), low-aeration porosity to very low (4-13%), useful water capacity range from very low up to high (70-200 mm/h) and low permeability-too small (0.1-2.2 mm/h).

Humus content of most soils fall between 2-3.5%. Higher values are specific as to cernice gleiosoils as some eutricambosoils evolving under forest vegetation. Over 60% of soils are weak acid-weak alkaline pH 6.1-8.4, lower values of pH (strongly to moderately acid 4.8-5.6) specific luvisoils majority.

The negative impact on processes of soil covering the relict Getic Piedmont, great as erosion, pollution and excess moisture stagnant.

CONCLUSIONS

1. The development of Getic Piedmont had two main phases were distinguished: prequaternary subsidence phase or sea-lake phase (senonian-Pliocene) and quaternary phase semi-lacuster and mainland. Piedmont was formed progressively from north to south in the time elapsed since the end of the Pleistocene Levantine to medium (Mindel).
2. The set of physical and geographical factors have determined ultimately forming the territory of Piedmont Getic a ground cover that has evolved from little lakes by vertisoils to luvisoils.
3. Most of these soils have a fine texture and even a strong textural differentiation, a low humus content, reaction moderately acidic pH to slightly alkaline and degree of saturation in the database varied.

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