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STUDIES ON THE FORMATION AND SPREADING OF THE MINERAL SOIL SLOPES IN CARAS-SEVERIN

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Abstract

Since ancient times, man has been preoccupied with knowledge of the origin and composition of the Earth, the great variety of rocks and minerals from which it is made. Over time, the Earth's surface has undergone major changes, changes due largely to various processes and climate phenomena that have succeeded in over millions of years. The term geological processes formed the rock new mineral deposits, which led ultimately to change the soil composition. The feedstock mineral soil resulting transformation is known as the parent rock or mother rock. In soils, rock or parent material, begins where biotic factor intervenes not exactly the depth at which the influence of living organisms (whether microorganisms, animals or roots, disappears. It is therefore the depth at which the content of organic matter is insignificant in terms of fertility of the soil. In the formation and spread of the mineral part of the soil, the first attempts were as starting point pedogenetical one or more factors, which led to a multiplicity of concepts and formulations. Among the first who realized pedologists such studies included the N. FLOREA, stating in 1985 that the formation of soil cover, in addition to pedogenesis processes involved and some geological processes that interfere with the formation of soil cover and they called processes pedogeological. To explain the genesis of soils and for determining their time evolution, both in natural conditions and in terms of their use by humans, it is necessary to analyze the specific and coordinated actions of all the factors involved in these processes (by Gh. IANOŞ and et Al., 1995).

Key words**:** *fertility, mineral deposits, rock, soil*

INTRODUCTION

In terms of geomorphology relief Caras-Severin is characterized by a great variety of forms: mountains 65,4% depressions, 16,5%, hills 10,8% and plains 7,3%.

Space mountain range comprises many groups belonging to the following geographical units: The Banat Mountains - compartment which includes: the Semenic Mountains, the Almaj Mountains, the Locvei Mountains, the Anina Mountains (Caras Mountains), the Dognecei Mountains; the western group of Southern Carpathians include: the Cerna Mountains, the Mehedinti Mountains, the Țarcu Mountains, the Small Mountain, the Southern peaks Poiana Rusca Mountains.

Hills have a relatively limited spread within the county. Major units are the Bozoviciului Hills, the Oraviţa Hills, the Doclin Hills and the Sacos – Zăgujeni Hills.

Plains form the lowest step of the relief, which occupies a small area within Timis Plain, with the following subunits: the Plain between the rivers Pogăniș and Bârzava coffer; the Moraviţei Plain situated at South from the Bârzava River; the Caras Plain drained by the river with the same name.

Banat relief arose after a lengthy trial period accompanied by morphological and morpho-tectonic sculptural modeling units formed. Genesis relief Banat is closely linked to the dynamics of the base plate. The mountain area is composed of crystalline rocks foundation formed by the metamorphosis of the old Paleozoic sediments and precambian during hercynian orogenesis.

MATERIALS AND METHODS

This paper is based on the selective evaluation of data from the literature on general and specific fundamental aspects concerning the formation and spread of the mineral part of the soil in Caras –Severin.

In order to establish the main specific minerals and rocks in the studied area, in addition to study literature, there have been

numerous trips in the study zone.

To determine the mineral and rock properties were studied them both with naked eye and with a magnifying glass. In addition to this simple method, to study in detail of the minerals have been used more accurate methods, microscopy, cristalo-chemicals, thermal and chemical properties. The morphological properties are related to the physical state of the mineral, their mode of presentation input, habitus and pairing mode. The main feature is that the mineralogical microscope using polarized light.

Transparent minerals are studied using transmitted light microscopes mineralogy. To study different types of minerals transparent constructive use of polarizing microscopes, including Leitz - Wetzlar, MIN, AMPLIVAL etc.

In order to make the mineral microscopic observations, it is necessary that they be prepared in advance in the form of thin sections transparent to allow light to pass through. These thin sections are obtained as follows: cut the sample to be investigated piece thinning by grinding to polishing, to obtain two flat surfaces. Opaque minerals are studied using reflected light by calcograhycs microscopes.

Some minerals, such as Azurite (blue) and malachite (green) can be identified on the basis of color. But color can often be misleading because many minerals may occur in varied colors. These variations may be due to: the impurities, heat, light, irradiation, and aging.

Determination of mineral properties is through the knowledge of individuals: - color - gloss - breach (fresh, unoxidized) - hardness - cleavage (burst mode), density, magnetic properties and radioactives etc.

RESULTS AND DISCUSSIONS

In terms of the constitution geological Poiana Rusca Mountains are three main assemblies lithological formations:

- Metamorphic formations spread across most of the area with mountainous;
- In the southern half of the mountains, south of alignment Tâncova - Ruschita, marked by several major tectonic dislocations, flourish intensely metamorphosed rocks, known as the "lens tems". These shales are represented by mica granite, gneiss and gneiss eye. Metamorphic age of these formations is estimated at 850,000-1,000,000 years. Magmatic formations with limited distribution are represented by massive Granodiorite intrusive occurring Vârciorova Valley. Sedimentary occur in peripheral areas hilly and sedimentary basins. Within these formations are two main associations of rocks with different effects on modeling relief: highly consolidated rocks, represented by Jurassic limestone, sandstone and marl Cretaceous conglomerates and poorly consolidated rocks represented by marl and sandstone sandy, sands and gravels age myo-Pliocene. Jurassic limestones forming steep wooded valley Vălişoara left side and white cliffs, isolated southwest of Rusca Montana. Ţarcu Mountains are founded on local geological lens of Retezat massif.

Petrographic constitution of local mountain is represented by chlorite - sericite schists, quartzites and age amfilolite autihercinic with intercalations of crystalline limestone. In some areas dominated gneiss and granodiorites textured borders. Over the Bistra Mărului Valley insertions are powerful Dorit (Boşcaiu N., 1971).

Even before the main orogenic mezocretatic phase over autochthonous crystalline lodged infragetic series of sedimentary deposits. Clearing areas of Mesozoic Mărului consist of black shale and phyllite belonging to this series.

The chemical composition of rocks (Table 1), can greatly influence soil nutrient content and pace of soil formation. Such influence have rocks with complex mineralogical composition, such as loess, which is formed fertile soils. If calcium carbonate-rich rocks in sodium, iron oxides, stands clearly influence their chemical composition, the rate of soil formation and soil composition results. Soil reaction printed by its parent rock may affect the mobility of elements: for example, phosphorus has a higher mobility in the pH

range of 5.5 to 7.0.

Oprea (1960), based on lengthy research, says the rocks which have in their composition sodium behave like rocks of delay the process of soil formation, and those containing calcium acts as rocks favoring these processes.

Apart from the direct influence of soil chemistry, mineralogy of rocks, especially the clay fraction, prints certain peculiarities of physical properties of soils.

Table 1. The main types of soils, materials, parental rocks and minerals prevalent in them (after G. Gâță 1973, cited by C. Chiriță, 1974)

Soils	Materials and parental rocks	Minerals
Kastanoziomur, chernozem and chernozem leachates	Loess and loess materials	Dioctaedric vermiculite, illite, interstratificaţii
	Proluvial and alluvial deposits with medium texture	Montmorillnit vermiculite, illite and interstratificaţii
Sands and soils formed on sand	Sand	Illite, vermiculite, interstratificaţii
Preluvisols and chernozem	Loess and loess materials	Dioctaedric vermiculite, illite, interstratificaţii, chlorite
	Sedimentary deposits with medium texture	Dioctaedric vermiculite, illite, interstratificaţii, montmorillonite
Prepodzoluri and podzols clay illuviated	Sedimentary deposits with medium texture	Dioctaedric partially chloritized vermiculite, illite, intersrtatificaţii
	Compacted sands, sandstones	Chloritized vermiculite, chlorite, illite, interstratificaţii
Districambisolurile and prepodzoluri, humic podzolic-feriiluviale	Micaşişturi	Illite, vermiculite, minerals mixed
	Granite, gnaissuri	Partially chloritized vermiculite, illite, mixed mineral
	Chlorite schists, sandstones with chlorite cement	Chlorite partially vermiculizat, illite, mixed mineral
Brown soils (mountain)	Andesite, basaltic rocks	Partially chloritized vermiculite, illite, interstratificaţii, montmorillonite
Humosiosoluri	Granite, gnaissuri	Chloritized vermiculite, illite, mixed mineral
Soils formed on tuffs	Tuffs, pyroclastic materials	Montmorillonite, illite, interstratificaţii
Rendzinic and pseudorendzine	Marly clays, marl, limestone	Dioctaedric vermiculite, montmorillonite, illite, interstratificaţii
Vertisols	Clay, loamy clays carbonate	Dioctaedric vermiculite, illite, chlorite, interstratificaţii
soils halomorfe	Marly clays, marl Salif	Montmorillonite, illite, vermiculite, interstratificaţii

Some processes, including bioaccumulation, are strongly influenced by the nature of the parent rock, which prints the specific morphology of the soil profile, hence the name lithomorf soils.

Calcareous rocks in humid regions where leaching process is particularly active, release large amounts of calcium ions, which will saturate organic acids and mineral colloids will give stability during the process of soil formation resulted. Through such action, such soils are formed rendzines the site of Albic Luvisoils also rich in ferric oxides in rocks, soils evolve well stocked in iron as preluvisoils, preluvisoils redheads and on rocks rich in soluble salts is formed halomorf soils, such solonetzs and aquisalids (Obrejanu, G., Puiu, S., 1972). The chemical properties of rocks and especially exert an indirect influence. This is reflected by the vegetation. The chemical composition of the rock is reflected in the composition of the plant and the dead organic matter in the soil quality, which in turn affects the composition of humus.

From what it appears that rock soil can print some specific features. However, the influence of generating the ground rock is subject to other factors, the decisive factor is the influence of bioclimatic.

Following the movements made in the field was recognized today: borders, granitoids, dacites, quartz porphyry, diorite, debris, conglomerates, boulders, sandstones, sands, clays, marls, clays, limestone, tuff, limestone, quartzite, sericites schists and the chlorite, crystalline limestones and pegmatitics many objects of dimensions of a few tens of centimeters to several tens of meters. In no event was highlighted that the presence of microcline porphyroblasts varieties (or other minerals) to discordant note in terms of size. As a result, choosing the terminology proposed by Ianovici et al. (1976), all samples of granitic rocks have been classified as solid (granular) or gneiss (schist) from the time of procurement.

Macroscopic study of samples taken showed that the granitoids gneiss texture is determined by the arrangement oriented micaceous minerals. Meanwhile, it was observed that the varieties gneiss rock, with biotites (major mineral) and muscovite occurs participation reducing its quantity from east to west. In some cases (mostly in the central parts of the massif) distinguish textural varieties of granite gneiss and massive but not exactly easy on macroscopic considerations. The mineral soil comes from rocks that make

up the lithosphere, subject to various physical and chemical processes of transformation through environmental factors. These transformations take place with different intensity depending on the nature of the mineral material originally. Minerals are inorganic, solid, homogeneous physico - chemical. They are classified according to the chemical composition of the five classes, the last oxygen salts, including the most common minerals in the lithosphere. We mention that silicates, which make up 75% of the weight of the lithosphere and all components are mineral rock.

Following alteration and disintegration resulting borders loam soil sandy or clayey, rich in potassium, phosphorus and moderately stocked poor in calcium. These soils have a low to medium fertility. In the Western part of the country there is a variety of granodioritic rocks called banned.

Soils formed on granodiorites are soils with a sandy loam to loamy, rich in calcium, the diorite are formed on soils rich in hydroxides of iron, calcium and other nutrients textured loamy to clayey and fertility good natural. On these rocks are formed shallow soils rich in skeleton (litho) and wetlands formed districambosoils podzols and low in minerals. In the lowlands, the deposits of gravel and limestone boulders forming rendzines. Sands are spread along rivers in the county and are of several types: limestone, quartz, ferruginous, micaceous, dolomite etc. After their origin, sands can be: alluvial, wind, moraine, abysmal and so on, and the size of the particles, sand can be: fine and coarse. The sands and sandstones formed sandy soil type and psamo-pelitic alluvisols, permeable soils with a brief profile on the plains and long hills and hillocks. These are soils with different fertility according to the state of solidification and mineralogical nature of the sands.

Of metamorphic rocks, quartz rock, hard rock disaggregated and are practically not altered. Following the disintegration give rise to quartz sandy sediments are therefore unsuitable for soil formation. Hard rock sericites schists are perishable. Soils formed on clayey soils they are superficial, low calcium and phosphorus. These soils have low fertility. Chlorite schists from disintegration and alteration processes give rise to a material fine, loamy, rich in nutrients.

Crystalline limestones are composed of calcite, quartz, talc, chlorite, hematite or coil. Because impurities embedded in them, marbles have different colors. At Ruşchiţa, their color is pinkish white and has a lower duriotate compared to other crystalline valcare.

CONCLUSIONS

Banat relief arose after a lengthy trial period accompanied by morphological and morpho-tectonic sculptural modeling units formed. Genesis relief Banat is closely linked to the dynamics of the base plate. The mountainous area, which occupies 65,4 % of the Caras-Severin, (followed by depression, 16,5%; hills 10,8%, and plains 7,3%) has its foundation composed of crystalline rocks formed by the metamorphosis of old Paleozoic sediments and precambien during hercynian orogenesis.

The area has a rocky foundation, generally built of crystalline limestone, mica and volcanic and sedimentary formations, is a mixture of metamorphic, sedimentary precipitation over the valley and metamorphic Bistra, above the alpine and subalpine.

These are covered by colluvial slopes and terraces and eluvium coarse (cobble), the valley is largely covered by a thin blanket of clay dust.

Of igneous rocks encountered in the study area, granodiorites family, there is a variety of rocks called Banat unique to this area.

The fertility of the soil in the area is different in rock or mineral according to which they were formed.

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