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STUDY OF SOIL COVER CENTRAL PACLE VALEY, AREA MUD VOLCANOES, BUZAU COUNTY

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Abstract

Pacle Valley basin is located in the west of Buzau Slănic, it is bordered by sinuous its turn to the north basin in the area of origin. It continues with the corresponding elementary surface haze hill where the mud volcanoes.
These formations are created by natural gas from more than 3,000 meters deep, passing through a clay layer in combination with the groundwater. Gas pushing toward the surface water mixed with clay.
The sludge formed by them resurfaces in those places, dry in contact with air, forming structures similar to conical volcanoes. This area was declared a natural monument since 1924, the only place in Europe where mud volcanoes can be seen, similar phenomena recorded only in Siberia and Australia.

Key words*: hydrographic basin, erosion, improvement, mud volcanoes.*

INTRODUCTION

In terms of geomorphology, Pacle Valley is part of the natural unit Berka-Pacle basin being located upstream of Berca. It charactetization through a mixed relief in the form of marbles, with narrow valleys separated by just scales and sharp. Slope processes and degradation of land, which are removed from the day-clay marl deposits, printing area a typical aspect of Badland. All surface basin is occupied by pastures and meadows, which are interspersed between small chaotic area used as arable land for maize.

Based on morphological and structural features, Pacle Valley can be divided into three zones, each with corresponding sub-basins: the upper third (area of origin); comprising the middle third of mud volcanoes; where closes the valley bottom third.

In all these perimeters soil mappings were conducted in order to obtain data on the natural resources of soil, useful economic outlook and tourist area. In this paper are presented results of studies undertaken in the middle third of the basin.

MATERIALS AND METHODS

Primeter Central Valley haze consists of two sub-basin: Strawberry Peak. Within this perimeter there are two relief units represented by the steep slopes of the two sub-basins and down stream area where the predominant slope below 10% (Figure1), the total area of 201.1 ha.

The data in Table 1 that the largest share (43.3%) held by areas with slopes between 20-25%.

Note also that an area 62.3 ha, or 31% of the total area studied, it has an inclination of 5-10%.

Figure 1. Central perimeter at Pacle Valey

Table 1. Distribution surfaces at perimeter Pacle Valley, on slope categories

Slope categories (%)	Surface	
	ha	%
5-10	62.3	31
10-15	23.8	11.8
15-20	14.6	7.3
20-25	87.6	43.6
>35	12.8	6.3
TOTAL	201.1	100

Lithological substrate consists mainly of clay and marl sometimes salif, loose sand or cement. The climate study area falls within the continental climate, characterized by average annual rainfall of 512 mm and an average annual temperature of 10.5°C. The most important feature of rainfall during the growing season is their high degree of torrential, causing erosion and landslides and flooding in lowland areas.

The vegetation in the central perimeter of the valley haze is woody and herbaceous. Vegetation timber from plantations or natural regeneration, occupy small areas in Eastern Valley Peak. Herbaceous vegetation is made up of associations *Botriochloa ischaemum* and *Festuca valesiaca*.

Meadow Valley in the crag where processes occur salinization, develops halophile micocenoze.

Farmland in the study area are exploited as pastures and hayfields less like. Overgrazing, without taking into account the precarious state of soil degradation have led to alarming southern slopes of the two sub-basins studied. Predominates in sub perimeters strong erosion, landslides weak paths thick and very dense areas without vegetation, basins and ravines.

Pedological study overall assessment of soil resources, presenting an overview of the potential of the earth, in the current degradation. Pedological mapping was carried out in two sub-basins, and the coating was carried out cartogram the ground (Figure 2).

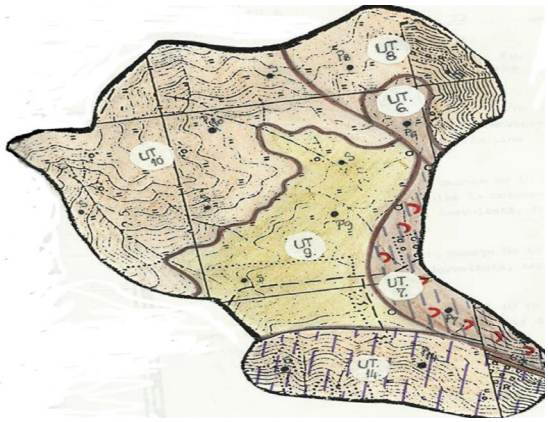

Figure 2. Cartography of the soils in the central pond of the Pacle Valley

They opened six profiles of which were sampled for physical and chemical determinations. The results obtained led to the identification of soil types confom current classification system (SRTS, 2012). Their spatial demarcation was carried out based on secondary profiles and surveys. The number of profiles and analytical methods have been established confom "Methodology drafting soil studies" - ICPA Bucharest, 1987.

RESULTS AND DISCUSSIONS

The soils in sub-basins studied were classified into two classes of soils, according SRTS 2012 namely: cernisoils and protisoils.

Pedogenetical processes are specific to the bioacumulation, argillic alteration, gleyzation and salinization.

Soil characterization of Pisca Valley

In this sub-opened three main sections of the ground. Soil types identified are: mold subtypes cambic, salinated and alkalized: regosol with typical subtype.

1. Cambic-chernozem (UT6)

The profile has been positioned in the middle third of the Pisca Valley, the slope uniform, moderately inclined faces north and has a profile Am-Bv1-Bv2-Bv3-Ck. Groundwater is 10 m deep, herbaceous vegetation, use of pasture, clay soil formation rock.

Soil is eroded weak because I have thick horizon of 22 cm, is deeply powerful, weak leachate, high-volume edafic used as pasture. The texture is smooth, uniform profile.

The proportion of clay in the range between 40.8% and 45.2% on the basis of the I profile, in Ck (Figure 3).

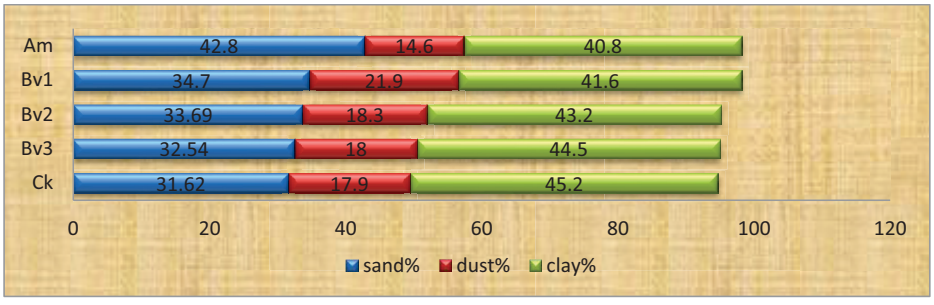

Figure 3. Granulometry of cambic-chernozem at Pisca Valley

Soil reaction is neutral in the first 60 cm of the profile, where the pH is 7 to 7.2 and slightly alkaline values in underlying horizons, where the pH value is 7.7-7.9.

Humus content is medium, with the highest values in bioaccumulation horizon with pronounced decrease since Bv2 horizon. (Figure 4).

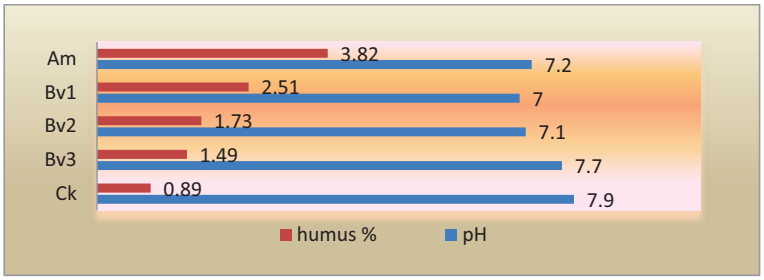

Figure 4. pH and humus contentat cambic-chernozem at Pisca Valey

2. Cambic-chernozem, salinated-gleize

The profile has been placed at the base of the slope, in the sub-basin floodplain with low inclination. The sequence of profile horizons: I-Bv1-Bv2sc-Bv3sc-CGO.

The argillic alteration is accompanied by a weak salinization, based gleyzation there is a moderate profile.

These two processes were triggered by soil mineralized aquifer, located at middle depth. The soil is very powerful deep edafic extremely high volume.

The texture is fine, loamy clay medium, uniform profile (Figure 5). The percentage of clay is between 40% and 50% in I underlying horizons.

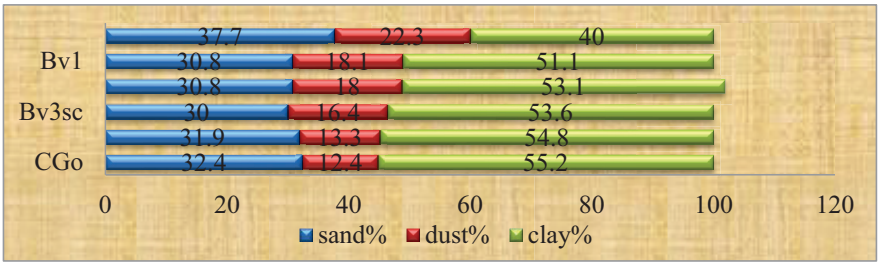

Figure 5. Granulometry cambic-chernozem, salinatat-gleize at Pisca Valley

In the first part of the profile horizons nesalinization, humus content is medium, and the reaction is slightly alkaline (Figure 6). In the second part of the profile, from 60 cm to the bottom profile in salinity and even gleyzation horizons, humus content is very low and moderately alkaline reaction.

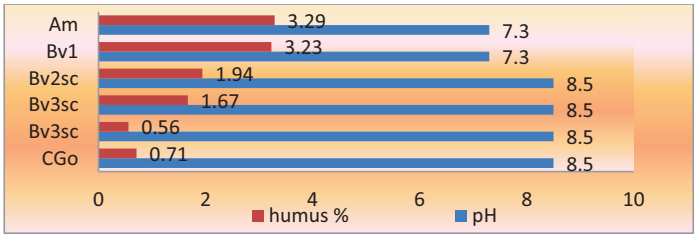

Figure 6. Humus content and pH at cambic-chernozem, salinat-gleize Pisca Valley

3. Tipic regosoil

Profile has been positioned in the upper third of Pisca Valley, on versed uneven, heavily tilted moderately shallow, small edaphic volume. The soil profile is short: Ao-C.

The texture is fine clay medium, uniform profile.

The percentage of clay was more than 42 %, the C is just 47 % (Figure 7).

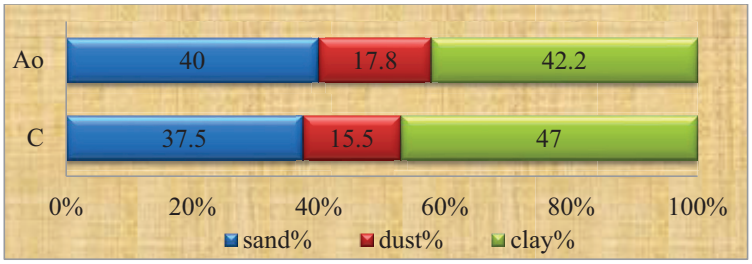

Figure 7. Granulometry of tipic regosoil at Pisca Valley

In the first horizon profile, reaction is neutral, there is an average humus, indicated that the horizon is only 10 cm thick.

Horizon C with weak alkaline reaction and low humus content (Figure 8).

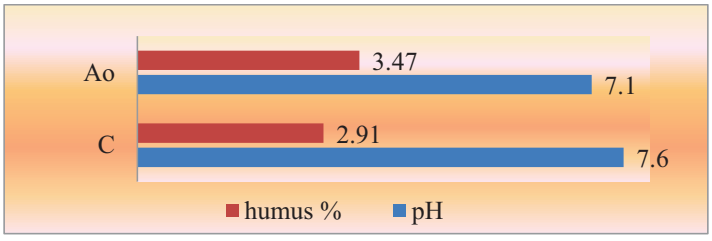

Figure 8. Humus content and pH at tipic regosoil at Pisca Valley

Characterization of soils at Capsuna Valley

In this hidrographic basin, two main profiles to the ground. Soil types identified are: colluvic aluviosoil and regosoil with typical subtype that continues from previous sub analyzed

1.Colluvic aluviosoil (UT9)

The profile has been sub-placed in the bottom third on upland slopes affected by landslides stabilized with weak tilting.

Soil profile is: Ao-C1-C2 (Bv). The texture is fine, loamy clay medium, uniform profile (Figure 9).

Clay has the highest value in the first part of the profile, because the original soil was covered with mineral slipped on the slope, came from a fine texture Bv horizon.

Humus content is small, decreases from 2.24% in Ao to 1.1% in C2 (Bv). The reaction is slightly alkaline (Figure 10).

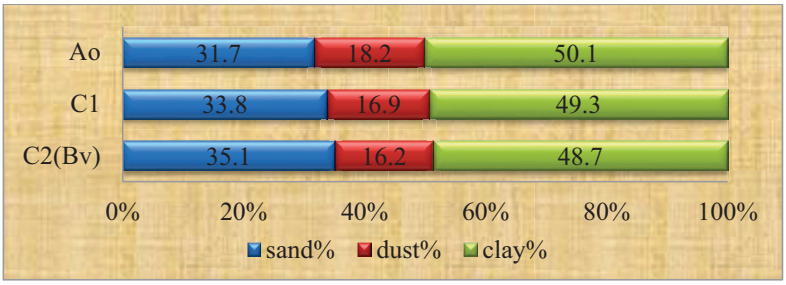

Figure 9. Granulometry at coluvic aluviosoil Capsuna Valley

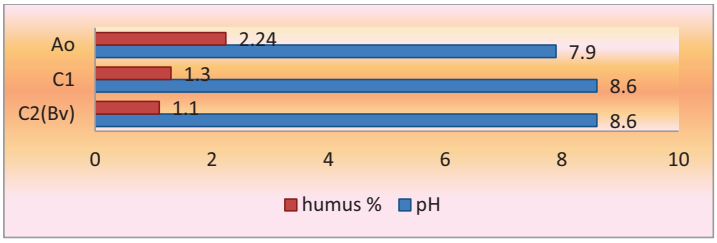

Figure 10. Humus content and pH at coluvic aluviosoil Capsuna Valley

2. Tipic regosoil (UT10)

The profile has been positioned in the upper third of sub Capsuna Valley, on the slope evenly heavily tilted moderately eroded with deep phreatic water sea. Soil profile is: Ao-C, with the upper horizon 10 cm thick.

The texture is fine, loamy clay medium, uniform profile. The percentage of clay is between 47.3% and 40.7% in Ao horizon in C (Figure 11).

The reaction is slightly alkaline, humus content is low with decreasing trend (Figure 12).

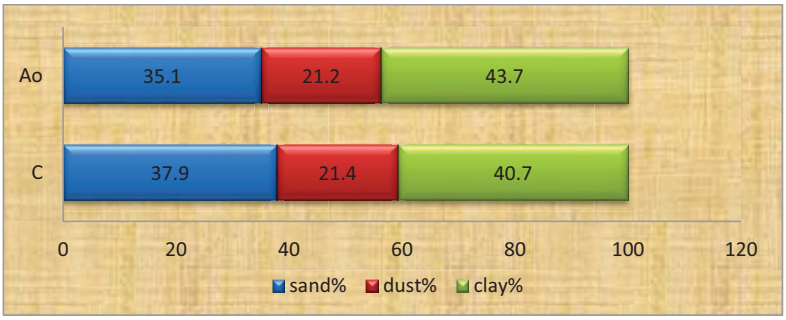

Figure 11. Granulometry at tipic regosoil Capsuna Valley

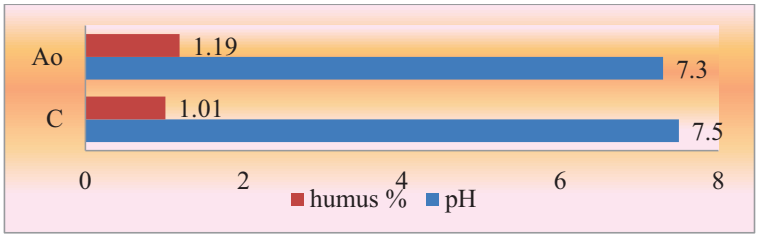

Figure 12. Humus content and pH at tipic regosoil Capsuna Valley

Characterization of soils at Pacle Valley

The right side of the Pacle Valey close perimeted studied.

In the watershed of the slope are mud volcanoes known as Small Pacle.

Salinic regosoil (UT14)

Uniform slope is moderately slope volume edafic small format Salif marl. Soil profile is short: Ao-C1sa-C2sa.

The texture is fine, loamy clay medium, uniform profile.

Clay content is between 39.6% and 45.3% (Figure 13).

Humus content is middle in the upper portion and the reaction is slightly alkaline, with pH values of 8.1 based on profile (Figure 14).

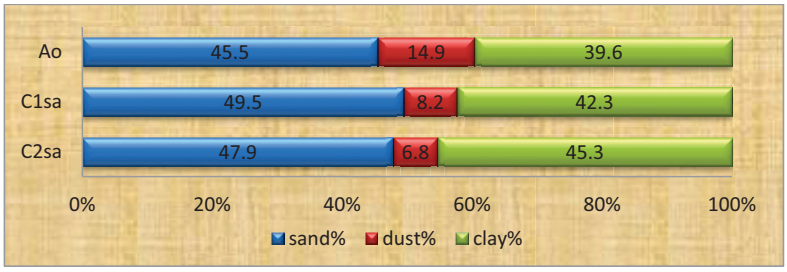

Figure 13. Granulometry salinic regosoil Pacle Valley

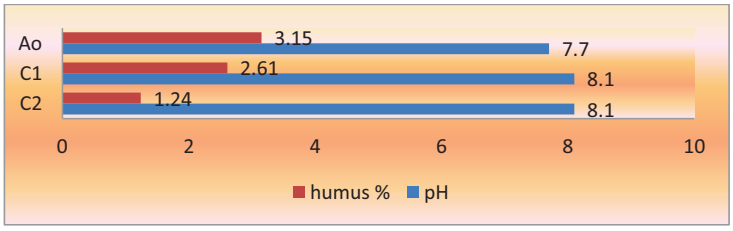

Figure 14. Humus content and pH at salinic regosoil Pacle Valley

CONCLUSIONS

Soils in the area studied fall into two classes: cernisoils and protisoils, soil type influent is regosoil. Pedogenetical main processes are bioacumulation and argillic alteration, which was added to salinization and gleyzation.

Parental materials are clay, marl and marl salif that all soils therefore have a fine texture, uniform profile and weak alkaline reaction.

Most of the area studied is operated under pasture.

Hydrographic basin studied slopes steeply and are affected by erosion and landslides.

Soil degradation processes are intensified by overgrazing and large animals load per unit area.

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