REPRESENTATIVE TYPES OF SOIL FROM MIERSIG PLAIN

Popa Florin Constantin*, Brejea Radu-Petru*

*Universitatea din Oradea, Facultatea de Protecția Mediului, B-dul. Gen Magheru 26
email: florin_popa_1@yahoo.com, rbrejea@yahoo.com

Abstract

In the Crişurilor Plain, the excess rainfall of humidity is manifested on an area of over 18,847 ha, occupied by the type of stagnant soil. Representative areas are found in Miersig Plain - 3304.6 ha, Veljurilor Plain - 740.4 ha, Cermei Plain - 5395.1 ha, Craivei Plain- 9188.2 ha, Crişul Negru Plain - 217.8 ha. In addition to this type of soil, in the Miersig Plain we also find in a significant proportion, luvosol type soil.

Keywords: soil, plain, Miersig, clay.

INTRODUCTION

Located on a Carpathian foundation covered with Quaternary sediments (clays, clayey sands, fine and coarse sands, gravels etc.) on top of which the current landscape was formed, Crișurilor Plain comprises two main orographic stages: one high, from glaciers to hills and another low, alluvial, to the west.

At the level of the terraces the plain was formed as a result of an erosion process, facilitated by the vicinity of the Crișuri rivers. Although arranged in steps, the surface of the landscape is, on the whole, a slightly inclined plane, from 200 m, as many as are in the vicinity of the hills, up to 110 m towards the low plain.

The Miersig Plain is a Piedmont type of plain being in contact with the Crișul Negru Hills and Depressions. Thus, the Miersig Plain is part of the higher plains of the Western Plain, along with Carei, Ierului, Cernei, Arad, Vingăi and Gătaiei.

MATERIAL AND METHOD

The present study aims at presenting the soil taxonomic units that are found at the level of the Miersig Plain.

The morphological, physico-chemical properties and the interpretation of the study are presented, these being included in the soil profile sheet.

The particle size analysis was performed by the Kacinski method, which involves separating the fractions by sieving (> 0.02 mm) or pipetting

(<0.02 mm), after a pre-treatment for dispersion with potassium hexametaphosphate (10%) in carbonate-free soil samples and organic matter below 5%; with hydrogen peroxide (6%) in carbonate - free soil samples with organic matter above 5% or in 2N hydrochloric acid and then with 1N sodium hydroxide solution during boiling in the case of carbonate soil samples. The results were expressed as a percentage of the material remaining after pretreatment.

Mobile phosphorus: by Egner-Riehm-Domingo method, by extraction in solution of ammonium lactate acetate at pH = 3.75. The phosphorus was measured colorimetrically with molybdenum blue-stannous chloride-ascorbic acid, according to the Nicolov method.

Potassium mobile: by extraction according to the Egner-Riehm-Domingo method and dosing by flame photometry.

RESULTS AND DISCUSSION

The soil types found in the constituent plains of the High Crișurilor Plain (including the Miersig Plain) are shown in Table 1.

Table 1

Areas occupied by different soil taxonomic units in the High Plain of Crișuri by subunits (according to SRTS-2012).

Soil taxonomic units	Plain subunits (areas occupied by soil types)					
	Bihariei Plain	Bihariei Field	Miersigului Plain	Veljurilor Plain	Cermeiului Plain	Craivei Plain
Total area	10354.2	1890.9	21496.6	21088.1	20940.2	16567.6
eutricambosoils	3452.8	151.5	934.7	2448.6	1417.4	34.3
preluvisols	2854.2	728.1	2339.9	3296.4	742.4	-
phaeozems	2552.7	175.3	4639.4	2067.8	104.4	-
gleiosols	726.2	208.8	162.8	550.9	1533	1039.1
alluvisols	108.4	566.4	885.9	469.7	4042.5	542.1
solonetzs	55.6	32.7	-	-	762.0	-
Luvisols	445.8	-	9211.1	3068.0	4426.9	2857.3
stagnosols	-	-	3304.6	740.4	5395.1	9188.2
vertisols	-	-			2497.2	23.6
plane soils	-	-			19.4	2882.9
Areas occupied by:rivers, lakes, canals,building						

PROFILE SHEET
REPRESENTATIVE PROFILE

Location: Bihor county, Miersig commune

Soil taxonomic unit: Luvosolalbicstagnic, clay, fine sandy clay, medium clay (SRTS), StagnicLuvisols (WRB-SR-1998), Epiaquic Hapludalfs (USDA-ST-1999).

Layers profile: ***Ao – Ea – EBw – Bt – BC – C***
Microrelief: negative profile
Soil appearance: normal
Parental material: clay
Groundwater depth: 5-8 m.

Morphological traits

Ao Layer: from 0 → 18 cm deep (25 cm thick), wet brownish gray (10YR5/ 2) and dry yellowish brownish gray (10YR6 / 2), grainy, disturbed by cultivation, fine, firm sandy clay wet, hard dry, poor plastic, poor adhesive, reclaimed.

Ea Layer: 18 → 34 cm deep (16 cm thick), wet yellowish gray (10YR6 / 2) and dry light yellowish gray (10YR7 / 2), unstructured, fine sandy clay, firmly wet , hard in the dry state, weakly plastic, weakly adhesive, moderately compact, damp.

EBw Layer: from 34 → 55 cm deep (24 cm thick), rusty yellowish brown (10YR5 / 4) with 25% reduction colors in the wet state and light hue brown in the dry state (10YR6 / 4), polyhedral angular, clay medium, firmly moist, hard in the dry state, weakly plastic, weakly adhesive, weakly moderate-compact.

Bt1w Layer : from 55 → 70 cm depth yellowish brown with rusty shades (10YR5 / 4) with 25% discount colors in the wet state and light brown in the dry state (10YR6 / 4), prismatic, medium clay, firm in the state wet, hard dry, poor plastic, poor adhesive, poor moderate-compact, reclaimed.

Bt2 Layer: from 70 → 110 cm deep (22 cm thick), wet brown yellow (10YZ5 / 6) and light brown dry yellow (10YR6 / 6), prismatic, well developed, firmly wet, hard in the dry state.

Table 2

Analytical data of the soil from Miersigului Plain

Layers	**Ao**	**Ea**	**EBw**	**Bt1w**	**Bt2**
Depths (cm)	0-18	18-34	34-55	55-70	70-140
Coarse sand% (2-0.2 mm)	6.1	4.4	5.6	2.3	1.6
Fine sand% (0.2-0.02 mm)	30.8	45.5	29.9	29.5	30.4
Dust% (0.02-0.002)	38.7	26.7	33.5	18.5	19.4
Clay (less than 0.002 mm)	24.4	23.4	31.0	49.7	48.6
Texture	LP	LL	LP	AL	AL
Water Ph	6.1	5.8	5.9	6.3	6.6
Humus	1.97	1.74	1.12	-	-
Total nitrogen%	0.098	0.087	-	-	-
Mobile phosphorus (ppm)	5.7	5.7	-	-	-
Mobile potassium (ppm)	50	40	-	-	-
Amount of exchange bases (me / 100 g. Soil)	14.4	14.4	-	-	-
Hydrolytic acidity (me / 100 g soil)	5.8	5.9	-	-	-
Degree of saturation in bases%	68.57	67.60	-	-	-

Interpretation of analytical data
-*texture*: it is medium in the first 34 cm.
-*soil reaction*: it is moderately acidic on 0-55 cm.
-*humus content*: it is small on the depth of 0-18 cm., reserve on ad. 0-50 cm of 137.9t / ha
-*nitrogen content*: it is very low
-*Potassium content*: it is small in all depth, poor supply
-*phosphorus content*: it is small on the depth of 0-18cm, poor supply

CONCLUSIONS

- Miersigului Plain is part of the High Crișuri Plain, occupying a total area of 21496.6 ha.
- The soil taxonomic units that dominate in the Miersig Plain are: preluvosols, phaeoziomes, luvosols, stagnosols.
- The soil has a predominantly acidic character, poor in salts and minerals (predominantly in the surface layers).

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