GEOGRAPHY OF SOILS FROM BARCĂU BASIN

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Abstract

The research was conducted over an area of 3446 km2, aimed at identifying units soils in the complex of the Basin Barcău and making maps of soils in a unitary (systems SRTS, WRB-SR-1998 USDA-st-1999) .The location of the soil profiles was conducted in accordance with norms soil research.Were identified and mapped 19 soil types belonging to 7 classes of soils and 80 subtypes of soil (according SRTS).

The characteristics of the soil units represented on maps and forms tabular correlated with the items investigated in field and laboratory data, obtained after carrying out analyzes of soil samples, allow storage in a database of information for the use and further processing for different purposes applications.For all soils studied were carried out physical and chemical analysis (texture, density, porosity, soil pH, content of calcium carbonate (CaCO3), humus content, total nitrogen ,index of nitrogen, carbon nitrogen ratio ,content in phosphorus, potassium content, the amount of exchangeable bases, total acidity, the degree of base saturation, exchangeable aluminum content).

Key words: type of soil, classification system, taxonomy, soil maps

INTRODUCTION

Being characterized by a great diversity of morphostructural units, local conditions of climate, vegetation and hydrographic basin Barcău presents a wide variety of soil taxonomic units.

The studies of soilsin the Barcău basin were conducted during 1997-2014.

To conduct the study were summarized results of research conducted in recent years in soil and natural conditions of training, so that the data obtained can be used in solving practical problems related to exploitation of soil resources. The practical side of importance as the scientific basis enriches the area, broadens the horizon of knowledge creates opportunities for orientation in the complexity of the issues raised, constituting a step towards diversification, soil data interpretation and evaluation purposes based on the results of applied research (Berchez, 2015; Josan, 2004).

MATERIAL AND METHOD

Laboratory data processing and interpretation was conducted according to existing regulations and rules in force (under development Methodology soil studies, 1987). The graphic representations were made in the form of maps and using specialized programs like Microsoft Excel, Global Mapper, Arc Gis. Identification of units taxonomic soil was

conducted in Romanian System of Soil Taxonomy (SRTS), the World Reference Base for Soil Resources (WBR-SR-1998) and the current American System - USDA Soil Taxonomy (USDA-ST-1999).

Based on documentary materials, lab results and observations made in the field they were conducted soil maps, taxonomic systems: SRTS-2003 WRB USDA-SR-1998-ST-1999:

- *Basin Barcău. Administrative-territorial organization. The location field of soil profiles*
- *Soils Barcău Basin. Soil classes (system SRTS)*
- *Soils Barcău Basin. Classes and soil types (system SRTS)*
- *Soils Barcău Basin (WRB system)*
- *Soils Barcău Basin (USDA system)*
- *Soils Barcău Basin. Classes and soil types. Administrative territorial units (system SRTS)*
- *Soils Barcău Basin. Classes and soil types. Morfostructurale relief units (system SRTS)*

RESULTS AND DISCUSSION

Administrative-territorial Barcău basin (the Romanian) concerning territorial expansion occupy territories located in Bihor, Salaj and Satu Mare. The largest area of the Barcău basin is located in Bihor county, localities Abram, Abrămuţ, Balc, Boianu Mare, Buduslău, Biharia, Brusturi, Chişlaz, Cetariu, Ciuhoi, Cherechiu, Curtuişeni, Derna, Diosig Marghita, Popeşti, Salacea, Săcueni, Sălard, Şimian, Sârbi, Spinuş, Şinteu, Suplacu de Barcău, Tarcea, Tăuteu, Viişoara. North and north-east basin is located in Satu Mare, localities Adrid, Căuaş, Cehal (Cehăluţ), Petresti, Pir, Piscolt, Săuca, Santău, Săcăşeni, Supur (Supuru de Jos), Tiream, east located in Salaj, localities Camăr, Hălmaşd, Marca, Ip, Nuşfalău, Plopiş, Valcău de Jos, Sâg.

For research, identification and demarcation of land in the Barcău basin have been executed in the period 1997-2014 a total of 39 main profiles, profiles 170 secondary and 350 control profiles.

The location of the soil profiles was conducted in accordance with norms soil research.Were identified and mapped 19 soil types belonging to 7 classes of soils and 80 subtypes of soil (according SRTS).

Table 1 lists the types and subtypes of soils identified in the Barcău basin.

Table 1.

The types and subtypes of soils identified in Barcău Basin area (SRTS, WRB-SR-1998 USDA-st-1999)

Soil type SRTS	Soil subtype SRTS	Soil type WRB-SR	Soil subtypeWRB-SR	Taxonomic unit. USDA-ST	Taxonomic subunit. USDA-ST
Litosol LS	Distric-LSdi Eutric-LSeu Scheletic-LSqq	Leptosols LP	Dystri-lithic-Leptosols, Dystric Leptosols, Eutri-lithic Leptosols, Eutric Leptosols-Hyperskeletic Leptosols	grupa Udorthents Ustrthents Cryorthents	Lithic Cryorthents Lithic Udorthents Lithic Ustorthents
Regosol RS	Distric-RSdi Eutric-RSeu Stagnic-RSst	Regosols RG	Dystric Regosols, Eutric Regosols, Stagnic Regosols	grupa Cryrothents Udorthents Ustorthents	Typic Cryorthents, Typic Udorthents, Typic Ustorthents, Epiaquic Udorthents
Psamosol PS	Distric-PSdi Eutric-PSeu Molic-PSmo Gleic-PSgc	Arenosols AR	Dystric Arenosols, Eutric Arenosols, Molic Arenosols, Endogleyc Arenosols	grupa Udipsamments Hapludostolls Haplustolls Ustipsaments	Typic Udipsamments Typic Ustipsaments, Psamentic Hapludostolls, Psamentic Haplustolls Endoaquic Udipsamments Endoaquic Ustipsaments

Aluviosol AS	Distric-ASdi Eutric-ASeu Molic-ASmo Vertic-ASvs Gleic-ASgc Salinic-ASsc Sodic-ASso	Fluviosols FL	Dystric Fluvisols, Eutric Fluvisols, Molic Fluvisols, Vertic Fluvisols, Gleyc Fluvisols, Salic Fluvisols, Sodic Fluvisols	grupa Dystrudepts, Udifluvents Ustifluvents	Fluventic Dystrudepts, Typic Udifluvents, Typic Ustifluvents, Mollic Udifluvents, Mollic Ustifluvents, Vertic Udifluvents, Vertic Ustifluvents, Endoaquic Udifluvents, Endoaquic Ustifluvents Endoaquic Ustifluvents (sodic phase)
Entiantro-posol-ET	Mixic-ETmy	Regosols RG	Anthropic Regosols	-	-
Cernoziom CZ	Tipic-CZti Vertic-CZvs Gleic-CZgc Cambic-CZcb Argic-CZar	Cherno-zems-CH	Calcic Chernozems, Vertic Chernozems, Gleyc Chernozems, Haplic Chernozems, Luvic Chernozems	grupa Hapludolls, Haplustolls Argiustolls	Entic Haplustolls, Entic Hapludolls, Vertic Haplustolls, Endoaquic Haplustolls, Endoaquic Hapludolls, Typic Haplustolls, Udic Argiustolls
Faeoziom FZ	Tipic-FZti	Phaeozems PH	Haplic Phaeozems	grupa Hapludolls, Argiudolls	Entic Hapludolls

Faeoziom FZ	Gleic-FZgc Stagnic-FZst Clino-gleic-FZcl Cambic-FZcb Argic-FZar	Phaeozems PH	Gleyc Phaeozems, Stagni Phaeozems, Stagni-gleyi Phaeozems, Haplic Phaeozems, Luvic Phaeozems		Endoaquic Hapludolls, Epiaquic Hapludolls, Epi-Endoaquic Hapludolls, Typic Hapludolls, Typic Argiudolls
Rendzină RZ	Cambică-RZca Calcarică-RZ Eutrică-RZ	Rendzic-leptosols LPrz	Rendzic Leptosols, Calco-Rendzic Leptosols, Eutri-Rendzi Leptosols	grupa Cryrendoll, Haprendolls	Inceptic-Lithic Cryrendolls, Inceptic-Lithic Haprendolls, Lithic Haprendolls, Lithic Cryrendolls
Eutri-cambosol-EC	Tipic-ECti Molic-ECmo Vertic-ECvs Gleic-ECgc Stagnic-ECst Litic-ECli Rodic-ECro	Eutric Cambisols CM	Eutric Cambisols, Mollic Cambisols, Eutri-vertic Cambisols, Gleyi-eutric Cambisols, Stagni-eutric Cambisols, Lepti-eutric-Cambisols, Rhodi-eutri Cambisols	grupa Eutrocryepts, Eutrudepts, Haplustepts	Typic Eutrocryepts, Typic Etrudepts, Typic Haplustolls, Vertic Etrudepts, Vertic Haplustepts Endoaquic Etrudepts, Lithic Eutrocryepts, Lithic Etrudepts, Lithic Haplustepts
Distri-cambosol DC	Tipic-DCti Litic-DCli Gleic-DCgc	Dystric Cambisols-Cmdy	Distric Cambisols, Lepti-Dystric Cambisols, Gleyi-distric Cambisols	grupa Dystrocryepts, Dystrudepts	Typic Dystrudepts, Lythic Dystrudepts, Endoaquic Dystrudepts

Pre-luvosol EL	Tipic-ELti Roşcat-ELrs Vertic-ELvs Stagnic-ELst Gleic-ELgc	Luvisols LV	Haplic Luvisols, Chromic Luvisols, Vertic Luvisols, Stagnic Luvisols, Gleyic Luvisols	grupa Hapludalfs, Haplustalfs	Typic Hapludalfs, Typic Haplustalfs, Inceptic Hapludalfs, Vertic Hapludalfs, Vertic Haplustalfs, Epiaquic Hapludalfs, Epiaquic Hapludalfs
Luvosol LV	Tipic-LVti Roşcat-LVrs Vertic-LVvr Albic-LVab Stagnic-LVst Gleic-LVgc Litc-LVli	Luvisols LV	Haplic Luvisols, Chromic Luvisols, Vertic Luvisols, Albic Luvisols, Stagnic Luvisols, Gleyc Luvisols, Leptic Luvisols	grupa Hapludalfs Haplustalfs	Typic Hapludalfs, Udic Hapludalfs, Vertic Hapludalfs, Vertic Haplustalfs, Gllosic Haplustalfs, Epiaquic Hapludalfs
Vertosol VS	Tipic-VSti Stagnic-VSst, Gleic-VSgc	Vertisols VR	Pellic Vertosols, Haplic Vertosols, Stagni-pellic-Vertosols, Gleyi-pellic-Vertosols, Gleyi-chromic-Vertosols	grupa Hapluderts Haplusterts	Typic Hapluderts, Typic Haplusterts, Epiaquic Hapluderts, Epiaquic-chromic Hapluderts, Endoaquic Hapluderts, Endoaquic Haplusterts, Endoaquic-chromic Hapluderts

Gleiosol GS	Distric-GSdi Eutric-GSeu Molic-GSmo Cernic-GSce Aluvic-GSal Cambic-GScb	Gleysols GL	Dystric Gleysols, Eutric Gleysols, Mollic Gleysols, Mollic Fluvic Gleysols, Haplic Gleysols	grrupa Endoqepts Endoaquolls	Typic Endoaquepts-calcic class /phase, Typic Endoaquolls, Mollic Endoaquepts, Fluviaquentic Endoaquepts, Typic Endoaquepts
Stagnosol ST	Tipic-STti Luvic-STlv Gleic-STgc Albic-STal	Luvisols-LV Cambisols-CM	Stagnic Cambisols, Stagnic Luvisols, Gleyi-stagnic-Cambisols, Stagni-albic Luvisols	grupa Epiquepts Epiqualfs	Typic Epiaquepts Typic Epiaqualfs Typic Glossaqualfs
Soloneţ SN	Tipic-SNti Molic-SNmo Luvic-SNlv Calcaric-SNka	Solonetz-SN	Haplic Solonetz, Mollic Solonetz,	grupa Natrudalfs Natrustolls Natrudolls	Aquic Natrustalfs Aquic Natrudalfs Aquic Natrustolls Aquic Natrudolls
Solonceac SC	Tipic-SCti Calcaric SCka Molic-SCmo	Solonchaks-SC	Haplic Solonchaks, Calcaric-Haplic Solonchaks, Mollic Solonchaks	grupa Haplosalids	Typic Haplosalids Typic Haplosalids-phase calcareous
Erodosol ER	Cambic-ERcb Argic-ERar Calcaric - ERka	Anthrosols AT	Cambisols Eroded phase, Luvisols Eroded phase, Calcaric Regosols-RGca	grupa Udorthents, Ustorthents	Inceptisols Eroded phase Alfisols Eroded phase Typic Udorthents Typic Ustorthents

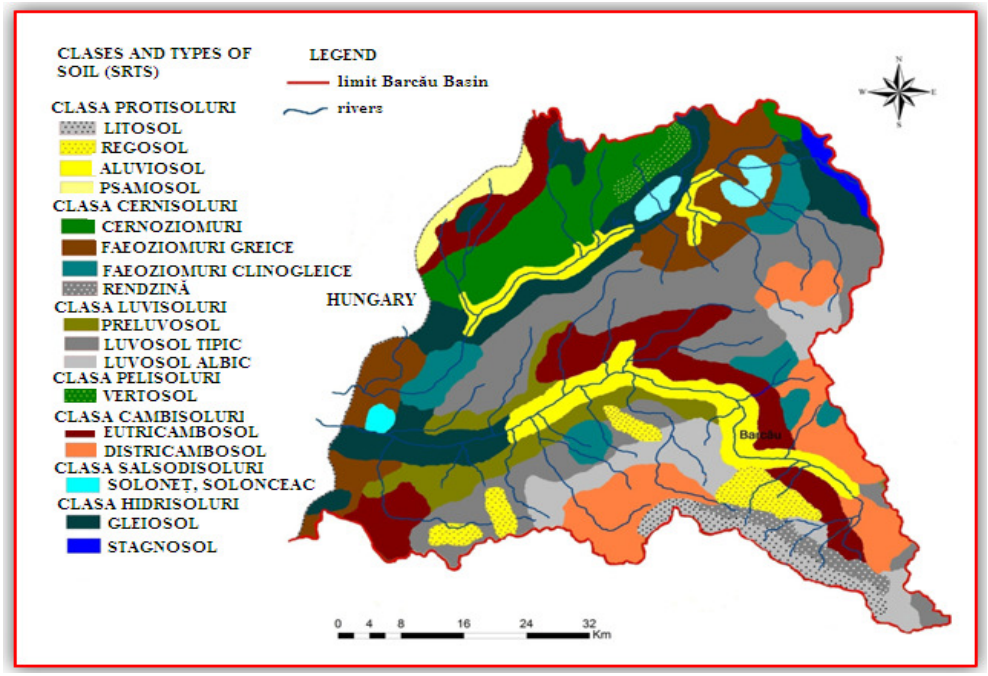

Fig. 1.Barcău Basin. Classes and soil types the system SRTS
(processing by the Soil Map of Romania, supplemented and amended)

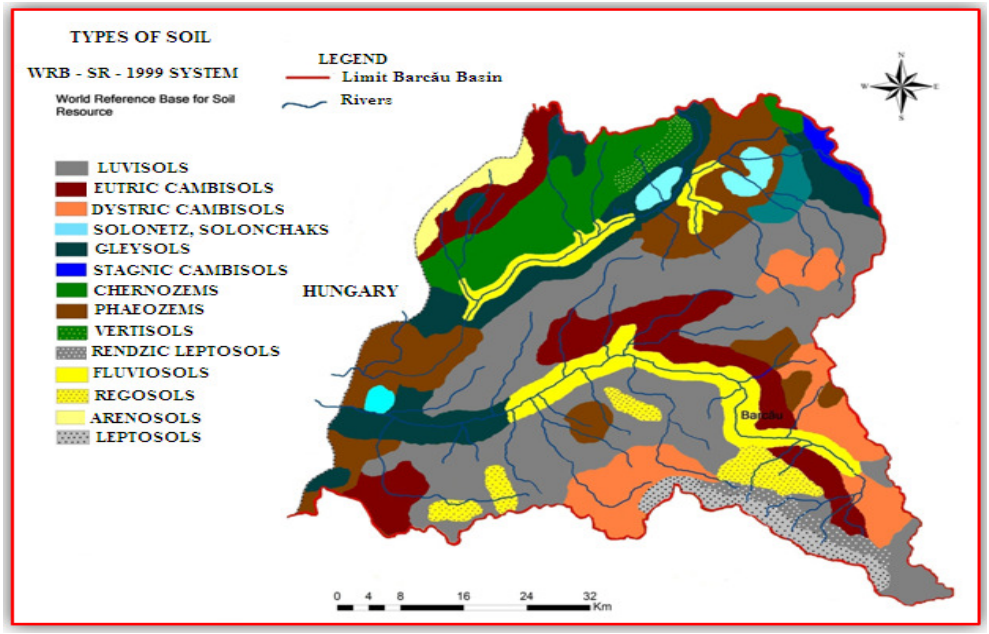

Fig. 2.Barcău Basin. Soil types, the system WBR-SR
(processing by the Soil Map of Romania, supplemented and amended

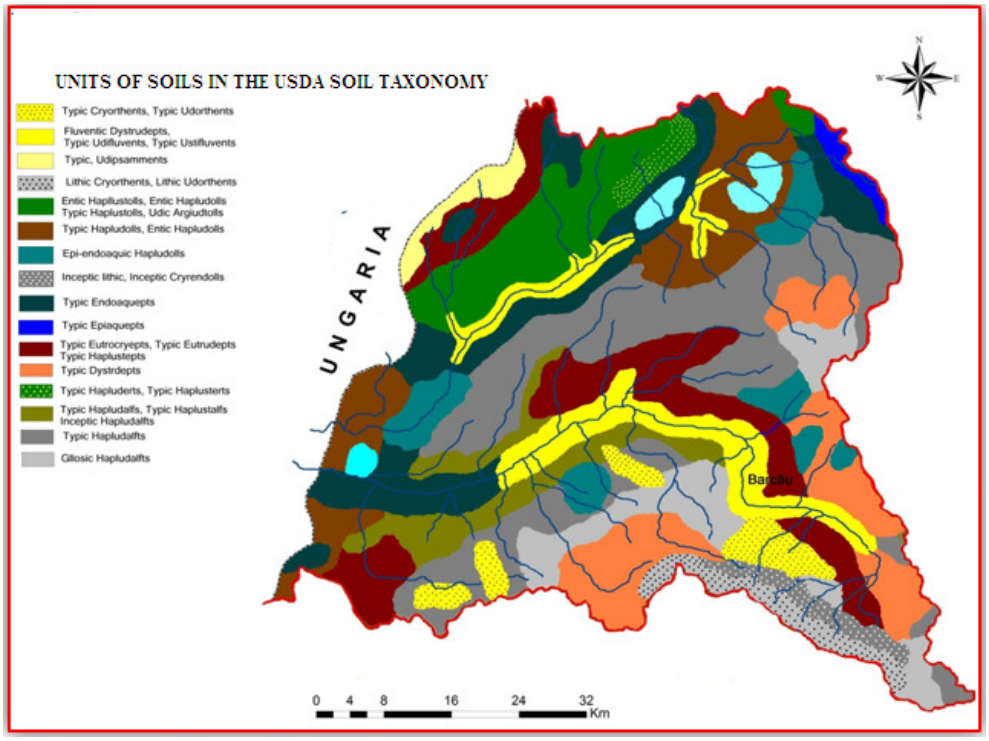

Fig. 3.Barcău Basin. Soil types, USDA-ST system
(processing by the Soil Map of Romania, supplemented and amended)

CONCLUSIONS

After researches and correlation with laboratory results were identified researched and mapped 19 soil types belonging to 7 classes of soils: Protisoluri, Cernisoluri, cambisoil, luvisoils, Pelisoluri, Hidrisoluri, Salsodisoluri and 80 subtypes of soil (SRTS-2003 system).

Studies Basin Barcău constitute a real basis in solving less studied or neglected so far, in terms of:

- Making maps of soil
- Conservation and rational use of land
- Knowledge of soil erosion affected areas
- Knowledge of areas affected by salinisation of soils and alkalizing
- Knowledge of soil surfaces showing excess moisture
- Knowledge of degraded areas of natural or artificial soils
- The territorial organization
- Work to restore degraded solurior
- Evaluating and technological characterization of land

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