

## IDENTIFICATION AND CHARACTERIZATION OF SOIL RESOURCES OF THE TERRITORY OF THE VILLAGE DUDEȘTI VECHI, TIMIS COUNTY

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**Abstract:** *In this document, the team of authors present some issues related to the characterization of existing soil cover common territory Dudești Vechi Timis. This work was conducted as thorough knowledge of soil resources in the region, knowledge is absolutely necessary to practice a sustainable and efficient agriculture. Studied area is part of the great physical and geographical unity; Banato-Crisana; taking place in the relief stage intermediate between the Western Carpathians and Pannonian depressions the sea. Different types and groups of genetic soil types existing today are the result of the actions investigated the perimeter in time and space complex pedogenetical factors (underlying rock, terrain, climate, vegetation, hydrography, hydrology, fauna) plus influences caused by human actions from drainage and drainage works to intensive agriculture today. Located in north-western county of Timis, the border with Serbia and Hungary, DJ 682, town Dudești Vechi (formerly Besenova Veche), resident of the village with the same name, lies at a distance of 77.6 kilometers of the City and 13 Sânnicolau 8 km Great nearest town. Dudești Vechi village covers an area of 19,158 ha, of which 18,483 ha is agricultural. As a result of the pedo-genetic processes was a mosaic of soil cover, which is also seen in the main soil types identified in the study area. The grouping of land units (UT) of soils results in the following types according to dominant SRTS 2003. The first part is presented explaining the natural phenomena and processes taking place in the ground and how these phenomena and processes can be influenced by man in agricultural activity. In the work conducted on the territory of Dudești Vechi, Timis, was intended to provide a fund of information on climatic resources and the existing soil cover administrative territory, based on documentation existrent soil. The paper will describe the natural formation and evolution of soils from the area studied, pedogenesis factors involved, the limiting factors of soil fertility and classification of the main classes, types and subtypes.*

**Key words:** *soil, soil cover, chernozem, climate, hydrography,*

### INTRODUCTION

Low plains covered with fluvio-lake deposits represent the lowest sector from the area of Banat. Are relatively recent, drained by several rivers with permanent regime. The low slope and local or general subsidences have determined cover of loessoid deposits and of the older alluviums with the recent alluviums or with very fine-textured deposits.

By the XVIII century, the rivers had not firmly fixed riverbeds, and the plain served as an intense area of marsh, punctuated by rare banks. After contact with the cone of scattering river Bega River and River, has been developed a discontinuous soil broadband of the salt sodic class.

### MATERIAL AND METHODS

The research was made in long periods, in Dudești Vechi, County Timis Communal Territory, like continuations of these effected by numerous researchers in this region.

Pedological studies has been made according with "Pedological studies elaboration methodology" produced by I.C.P.A.—Bucharest, and soils type was established according with "Romanian system of soils taxonomy—2003".

## RESULTS AND DISCUSSIONS

Located in north-western county of Timis, the border with Serbia and Hungary, DJ 682, town Dudeștii Vechi (formerly Besenova Veche), resident of the village with the same name, lies at a distance of 77.6 kilometers of the City and 13 Sânnicolau 8 km Great nearest town. Dudeștii Vechi village covers an area of 19,158 ha, of which 18,483 ha is agricultural.

Fits in the eastern extremity of the Tisa Plain, the studied area shows a single unit of relief, the plain, with the appearance of a large alluvial areas of subsidence and digression, which parasitize many whites abandoned courses representing the old channel and tributaries Aranca its plain low can hardly be distinguished from meadow itself due to the poor surface. In some areas, along Aranci, one can separate microluncă 50-100 m wide, bounded by the rest of interfluvium with a short version of 20-40 cm, with the general slope of 2-5%. Absolute altitudes ranging from 1978 to 1984 m, decrease from east to west.

The relief area, apparently uniform, many forms of alternative microrelief, represented by banks, loess Popina whites abandoned meanders, rings, dry, small crovuri and especially in the areas of general depression, micro relief of Gilgit, the current landscape standing out some mounds probably tumulus old Celtic.

The territory is located in the river village Aranca, respectively Aranca drainage system, drainage, overlapping the old course of the Mureș parasite, which before were flooded impoundments often presenting itself as a genuine area of digression, strong alluvial.

The main tributaries are Cociohatul Aranca, with its tributary Ciarda Red and Muresan (Gypsy Valley), both channeled and regulated.

Surface hydrographic network, in addition to the listed water bodies, is established and an extensive network of drainage and irrigation canals shaped and developed since the nineteenth century until today, the most recent fund-Mures Aranca liaison channel on they require a strong high dams in the relief of 5-6 m.

The temperate climate is moderate continental, with slight Mediterranean influences, the alternation of mild winters are not too hot summers, with precipitation in each month, but unevenly distributed, the springs are generally short and autumns, longer. The average annual temperature is 10.8 ° C and average yearly rainfall is 536.3 mm (station Sânnicolau sea).

After the massive deforestation of the old forest, since sec. eighteenth century have survived, especially around old wells, small clusters or isolated specimens of species such as *Quercus robur* (oak), *Fraxinus excelsior* (ash), *Ulmus foliacea* (elm), *Acer campestre* (maple), *Prunus spinosa* (pigeon), *Crataegus monogyna* (Hawthorn), *Ligustrum vulgare* (privet).

Mesophilic herbaceous vegetation consists mainly of species such as *Festuca Sulcata* (fescue), *Koeleria gracilis*, *Salvia pratensis* and *S. Austrian* (sage), *Centaurea micranthos* (Pesma), plants of *Agropyron cristatum* xerofilă (pir), *Lolium perenne* (ryegrass), *Bromus inermis* (obsigă), *Poa bulbosa* (smooth-stalked meadowgrass), *Cynodon dactylon* (couch grass thick), *Euphorbia glareosa* (dog's milk), and vegetation, saline and alkaline land holding is represented by *pseudovina Festuca* (fescue) *Poa bulbosa* var. *Vivipara* and *P. annua* (nature), *Aster tripolium* (blue), *Atriplex littoralis* (goats), the *Gmelin* (mother fish), *Artemisia monogyna* var. *saline* (wormwood), *Camphorosma ovate*, *hystrix Hordeum* (barley), *Matricaria Chamomilla* (Chamomile), *Lotus tenuis* (ghizdei), *fragiferum Trifolium*, *T. angulatum* and *T. ornithopodioides* (clover).

On small areas and isolated closed depressions, drainage canals around the old water courses, today in the form of rings and abandoned meanders, supradwelling species such as *Phragmites communis* associations (cane), *Calamagrotis pseudophragmites* (cane field), *Carex spp* (sedge), *Juncus spp* (Rust).

As a result of the pedo-genetic processes was a mosaic of soil cover, which is also seen in the main soil types identified in the study area (table 1). The grouping of land units

(TU) of soils results in the following types according to dominant SRTS 2003.

Table 1

Main soil types in the Dudesti Vechi				
No.	Class	Type	Area (ha)	% of the studied area
1.	Protisoils	Aluvisoil	3564	18,6
2.		Entiantroposoil	19	0,1
3.	Cernisoils	Chernozem	2663	13,9
4.		Faeoziom	440	2,3
5.	Cambisoils	Eutricambosoil	287	1,5
6.	Pelisoils	Vertosoil	6418	33,5
7.	Hydrisoils	Gleyosoil	191	1
8.	Salsodisoils	Solonets	58	0,3
9.	Soil associations		5517	28,8

The agricultural land that belongs to the commune Dudesti Vechi is Timis set up in all categories of use, the most important being the arable land gives the status of major agricultural zone economy Timis county (Table 2 and Figure 1).

Regarding the recruitment of quality classes (fertility) for the category of use; arable land, is as follows: cl.I 1634 ha (8.8%), cl II 1828ha (9.9%), cl . III has a 6932 ha (37.5%), cl. IV of 7338 ha (39.7%) and cl. Will the 751 ha (4.1%).

Table 2

The categories of use, area and weight			
No	Use category	Area (ha)	%
1	Arable	16932	91,6
2	Pasture	1400	7,6
3	Grassland,	39	0,2
4	Orchards	15	0,08
5	Unproductive	98	0,52
6	Total	19158	100

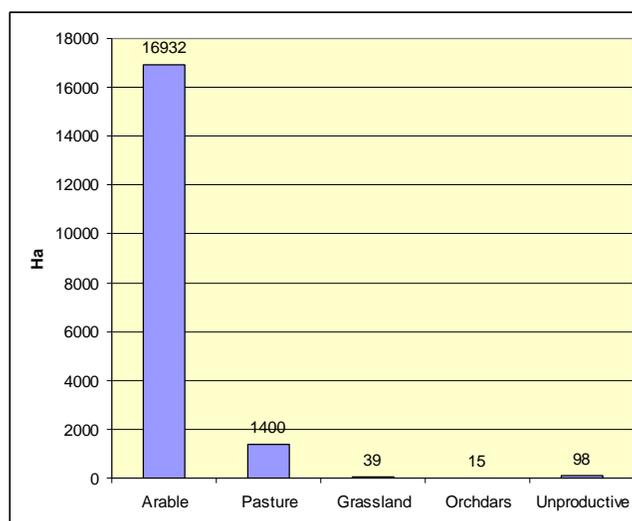


Figure 1: The categories of use and surfaces

The main limiting factors affecting the quality of the soil cover are sized salinization (which imposes severe limitations on the surface 3.9%, moderate 7.9%), reduced 47.3%), alkalization (0.3% extremely severe severe, 10.3%), moderate 11.5%, 55.1% lower) and acidity (moderate 1.5%), reduced 8.3%), the reserve of humus (1.2% moderate, 16 low, 7%) compactness (severe 22.1%, moderate 32.0%), stagnant excess moisture (11.6% severe, moderate 8.1%) and flooding by overflow (very severe 0.3%, 0.6% severe).

Breeding and productive potential of agricultural land in this area can be done in terms of integrated approach to those measures hydroameliorative agropedoameliorative and cultural currents which will aim to provide a system aerohidric soil, the optimal parameters of functionality.

They require rehabilitation and modernization of drainage network and the introduction of agricultural technology systems to include minimum soil works, intercropping, in order to protect soil, etc. Mulching with crop residues.

### CONCLUSIONS

In the work conducted on the territory of Dudesti Vechi, Timis, was intended to provide a fund of information on climatic resources and the existing soil cover administrative territory, based on documentation existrente soil.

The first part is presented explaining the natural phenomena and processes taking place in the ground and how these phenomena and processes can be influenced by man in agricultural activity. Thus, as above, in the commune of the Timis County Dudesti Vechi view of the landscape following conclusions:

-the area studied has a single unit of relief, the plain, with the appearance of a large alluvial areas of subsidence and digression, which parasitize many whites abandoned courses representing the old channel;

- the village is located in the river Aranca, respectively Aranca drainage system, drainage, overlapping the old course of the Mureş parasite;

- temperate climate is moderate continental, with slight Mediterranean influence, by the alternation of mild winters are not too hot summers, with precipitation in each month, but unevenly distributed;

- The area is situated at the junction to the Danubian steppe zone, with sub-sub-steppe antestepei.

Soil resources identified as Romanian System of Soil Taxonomy (SRTS-2003) in the space of six classes are investigated soils (Protisoluri, Cernisoluri, Cambisols, Pelisoluri, Hidrisoluri and Salsodisoluri), 8 types (aluviosol, Entiantroposol, chernozem, Faeoziom, Eutricambosol, gley, Vertosol, soluii Soloneş and associations) and 24 subtypes.

### BIBLIOGRAFY

1. MUNTEANU I.( 2000). On some problems of soil-Soil Science studies, vol XXIV, no. 1, p. 19-32
2. NIŢĂ L., MIHUŢ CASIANA, M. STROIA, K. LAŢO (2009). Bonitatea terenurilor agricole din zona comunei Lovrin, jud. Timiş, afectate de activitatea de extracție a petrolului Research Journal of Agricultural Science vol.41(1) Agroprint Editorial Timișoara, ISSN 2066-1843, p. 483-486.
3. RUSU I., STEFAN V., NIŢĂ L. STROIA M., DUMA-COPCEA ANISOARA, (2002). Favorability soils in Timis County for the main crops - Scientific Papers, vol XXXIV, Timisoara, p. 35-40,
4. ȚĂRĂU D., LUCA M. Panoptic al comunelor bănațene din perspectivă pedologică, Ed. Marineasa 2002.
5. XXX, (1987). Methodology development including soil studies, vol I, II and III, ICPA Bucharest.