

CHARACTERIZATION OF SOILS PEDO PECICA NEAR THE VILLAGE, ARAD

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Abstract: *Pecica locality is situated on the plain Mures and has a very low relief. Pecica covers two distinct landforms: a low plain in Mureș Floodplain, and a higher plain, which stretches north and north-west, both very fertile. This work is based on the selective evaluation of literature data on fundamental aspects of general and specific capacity of agricultural land Pecica, Arad. For farmland assessment must be characterized within the village natural studied, identification and characterization of soils and calculation evaluation notes, determining employment suitability and land fertility classes. All types and subtypes identified in Mureș meadow soils are soils of steppe and meadow alluvial character. Thus the perimeter investigated are two well differentiated areas with soils as a result of different pedogenetic conditions. The 19. 000 ha arable belonging Pecica village consist of chernozem cambic chernozem typical they join. (Pecica Hall, Arad).*

Key words: *soil, land, favorability, evaluation notes, fertility classes.*

INTRODUCTION

Research and practical work of evaluation were performed in almost all countries of the world, using a variety of systems and principles to tackle this complicated problem.

Country map border expanse of the city is situated on the meridian passing through Ferra Islands between 38 ° 36 'and 46 ° 15' north latitude.

Of altitude is 103 meters and the Vine Hill to the north, where the old stables start, the land rises from 110 to 123 m above sea level.

The climate is moderate continental, with warm summers and mild winters. The average annual temperature is 10.5 ° C and annual average rainfall of 550 mm.

Purpose of this paper is to evaluate agricultural production capacity trains for rational use. (Pecica Hall, Arad).

MATERIALS AND METHODS

Following analyzes were performed, and used the following methods:

Determination of physical characteristics.

Soil texture was determined by the method Cernikova (principle underlying the method is sedimentation speed pipetting different particles in a liquid, depending on their size, according to Stokes's law. (Duma Copcea Anișoara, et al. 2007).

Determination of chemical characteristics

Detreminarea humus content of the soil was performed by methods tritimetrice respectively Tiurin method.

Determination of soil reaction (pH) was performed by the method of potentiometric pH-sensitive glass electrode, at a ratio soil: water 1:2.5;

Determination mobile phosphorus and potassium, ammonium lactate acetate extraction at pH 3, 75 and calorimetric determination of phosphorus with molybdate - stannous chloride - ascorbic acid after Murphy method, respectively flamfotometrică potassium. (TEAC D., et al., 1979, & TEAC D. 1980).

Determination of total cation exchange capacity (T) was performed according to the method Bower, by saturating the soil with 1N Na Na acetate at pH - 8.2.

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Exchange capacity for bases (sum of base exchange) (SB) - is expressed in me / 100 g soil completely dry at 1050C, and results of all cations basic $Ca^{2+} + Mg^{2+} + K^{+} + Na^{+}$ adsorbed in complex colloidal soil .

Exchange capacity for hydrogen (hydrogen adsorbed) (SH) - is expressed in me/100 g soil and are all hydrogen cations H^{+} adsorbed in the soil colloidal complex.

SH determination was made by percolating soil to exhaustion su 1N solution of potassium acetate buffer at pH = 8.3.

To calculate evaluation notes from many environmental conditions 8 groups mentioned) that characterize each field unit (UT or TEO), defined in the Soil Survey were chosen only those considered most important, easier and more accurate measurable, which are usually found in the works of soil Survey. (Stephen V., et al.2004).

RESULTS AND DISCUSSION

The perimeter investigated are two well differentiated areas with soils as a result of different pedogenetic conditions.

The 19. 000 ha arable belonging Pecica village consist of chernozem cambic chernozem typical they join.

Between the two uses no major differences in the response of these soils, the average weighted pH - falling - is from the same range (7.21 to 8.40) for both the arable and pasture and meadow.

Thus most arable land use (94%) and the total area of pastures and meadows react weakly alkaline, neutral values of pH -, where typical chernozems predominate.

pH values - the land of high specific area are attributable - the carbonates in the upper horizon.

Appropriate measures are related to the use of chemical fertilizer (especially nitrogen) having a physiological reaction acid - ammonium nitrate, ammonium sulphate - and manure for its complex effect.

Humus content indicates a good supply, the weighted average being 3.24%.

Dividing surfaces on levels of interpretation indicates humus supply 71% of the arable land and the rest middle instead to pasture and meadow, high humus content is greater than 40% over the entire surface.

The typical chernozem soil profile

Location: Arad County Pecica

ENVIRONMENTAL CONDITIONS

Terrain: lowland;

Parental material: loess materials;

Groundwater depth: 1.5 to 2 m;

Vegetation: grass + hoes;

Table 1

Analytical data for typical chernozem

HORIZONS	A _m	A/C	C _{ca}
Depth (cm)	0-50	50-99	99-150
Coarse sand (2,0-0,2mm %)	0,2	0,2	0,2
Sand (0,2-0,02 mm%)	26	29,2	29,6
Dust (0,02-0,002 mm%)	33	30	32
Clay 2 (sub 0,002 mm %)	40	40,2	38
Texture	LA	LA	LA
Specific gravity (D g/cm ³)	2,52	2,50	2,53
Bulk density (DA g/cm ³)	1,30	1,40	1,50
Total porosity (PT%)	50	43	48
pH in H ₂ O	7,16	7,90	8,40
Humus (%)	2,70	1,90	0,90
CaCO ₃ %	-	2,3	10

Morphological characters

Chernozem typical profile is as follows: I - A / C - C or approx. Unlike typical chernozem soil Balan has a thicker profile and well-differentiated horizons.

I have a dark color from brown to black, thick 40-50 cm or more times;

A / C has a darker color to the I, dark brown to gray brown, thickness is 20-25 cm, value and chroma to 3.5 wet material;

C or Ca thick horizon of 30-40 cm or more. Often this horizon are not formed due to intensive irrigation wash calcium carbonate.

Full profile are neoformation biogenic namely: coprolite, larvae crotovine, etc.

Physical and chemical properties

The undifferentiated texture typical chernozem profile. In the upper portion of the clay is added because solificării.

Glomerular structure is well developed and moderately We horizon A / C.

This type of soil is loose and permeable with a good capacity for water and air, working - is good and easy.

The best soils rich in humus, 150-200 t / ha, calcium mull humus type. Degree of base saturation is 100%, pH - is neutral-alkaline (6.6 - 7).

These soils are well supplied with nutrients, with a very intense microbiological activity.

Soil taxonomic unit: typical chernozem on loess material.

The cambic chernozem soil profile

Located: Arad

Location: Pecica

ENVIRONMENTAL CONDITIONS

Terrain: lowland;

Slope exhibition: 0-1%;

Groundwater depth: 1.5 to 2.0 m;

Vegetation mash.

Table 2

Analytical data for cambic chernozem

HORIZONS	A _m	B _v	C _{ca}
Depth (cm)	0-50	30-60	60-120
Coarse sand (2,0-0,2mm %)	0,3	0,3	0,3
Sand (0,2-0,02 mm%)	26	23,1	24,1
Dust (0,02-0,002 mm%)	28	33	35

Clay 2 (sub 0,002 mm %)	28,1	33,1	35,2
Texture	AL	AL	AL
Specific gravity (D g/cm ³)	2,52	2,60	2,60
Bulk density (DA g/cm ³)	1,38	1,43	1,48
Total porosity (PT%)	47	46	41
Coef. The hygroscopicity (CH%)	10,2	9,7	8,1
Coef. Of wilting (CO%)	15,2	14,2	13,1
pH in H ₂ O	7,10	7,60	8,30
Humus (%)	3,36	1,89	1,29
Degree of base saturation (V%)	89,2	90	-

Morphological characters

Cambic chernozem have: Am – Bv- Cca

I have really dark brown black thick 40-50 cm or more.

Closed by color, thickness is 30 - 60 cm,

C yellowish brown, reaching up to 120 cm thick.

As in typical chernozem, chernozem cambic is rich in biogenic neoformation.

Physical and chemical properties

The texture is medium, loamy or clayey - sandy.

Clay is fairly obvious, formed by alteration during solidification processes, especially Bv horizon, which is the result of altered parent material.

Glomerular structure first and middle horizon is well developed and is presented in the following polyhedral horizon.

These types of soils are permeable, with a good capacity for water and air and is easily worked.

pH - the acid is neutral, ie below 7. Degree of base saturation sometimes descends to the value of 85%.

These soils are rich in humus quality.

Soil taxonomic unit: cambic chernozem on loess.

In order to assess the production capacity of agricultural land Pecica, Arad County, we chose the full set of 17 indicators of environmental conditions, more meaningful, more accurate determinants. Detailed results are presented for different categories of use or crop groups with the same biological and technological features.

For each indicator, depending on the scale of the use or culture, were made tables with values of those coefficients. (TEAC D., 1970 & TEAC D., 1978)

Table 3 are presented evaluation marks and fertility classes for wheat, maize and sunflower.

Table 3

Favorabiliata Pecica soils for wheat, maize and sunflower

No. Crt	Soil type	wheat		maize		F sunflower	
		Note bonita	Fertility class.	Note bonita	Fertility class.	Note bonita	Fertility class.
1.	Typical chernozem	90	II	90	II	90	II
2.	Chernozem cambic	90	II	90	II	80	III

- typical chernozem has a score of 90 points fertility class II - for all three crops, wheat, corn, sunflower.
 - chernozem cambic the note of evaluation 90 and class II fertility for wheat and corn and of evaluation note 80, Class III fertility culture Sunflower -.
- Table 4 evaluation notes are present culture of vegetables.

Table 4

Pecica suitability of soils for vegetables

No Crt.	Soil type	vegetables	
		Note bonita	Fertility class.
1	Typical chernozem	90	II
2	Chernozem cambic	80	III

Vegetables can be easily grown on soils where irrigation water source provided a number of other favorable factors

- typical chernozem presents favorable conditions for growing vegetables with a score of 90 points, fertility class II - a;
- cambic chernozem fertility in class III, with value evaluation notes 80.

In tables 5 are presented evaluation marks and fertility classes crops pastures and meadows.

Table 5

Pecica suitability of soils for pasture and meadow

No Crt.	Soil type	pasture		meadow	
		Note bonita	Fertility class.	Note bonita	Fertility class.
1	Typical chernozem	90	II	90	II
2	Chernozem cambic	90	II	80	III

Pasture and meadow crops boniatre the notes specific fertility classes II and III.

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