

## QUANTITATIVE ASSESSMENT OF LAND TO THE TOWN PLANNING FĂRCAȘELE, OLT COUNTY

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**Abstract:** In principle, land evaluation is to compare the properties and characteristics of the requirements or demands of land (use) it. Farmland assessment is the basis of their classification as class, after the note of evaluation in natural conditions. In concept assessing the concept of "land" includes all environmental factors (soil, terrain, climate, hydrology, etc.), which have significant influence on use. Because of economic conditions, different land in the same class of evaluation in natural conditions may have different economic outcomes, resulting in the amount of net income and therefore different economic values. Quantitative assessment of land was based on estimated production potential of evaluation by marks, calculated for existing conditions on the ground (current or natural conditions). Note of evaluation (natural conditions) divided the land quality in terms of their quality for agricultural use, and the use of shared framework in terms of production capacity. Agricultural production is adversely affected by restrictions given by some properties of soil, terrain and climate, which show equal intensities, decreases depending on how different productions of land use (arable, pasture, vines), so one and the same land may have restrictions of varying intensity

depending on his usage. The land evaluation for natural conditions, ecological characterization participated indicators for determining the coefficients stringent evaluation notes. The physical and chemical properties of soil samples (texture, pH, humus and N, P, K content) and biochemical were analyzed in the OSPA Olt Research laboratory, according with the national norms and standards approved by National Association of Standardization. Research of ecopedological conditions, data ordering and processing was done in accordance with the Methodology of Elaboration of Pedological Studies; (vol. I, II, III), developed by the ICPA Bucharest in 1987 and the Romanian System of Soil Taxonomy (SRTS-2003). For details of the work to be as conclusive materials were used in the cadastral records OJCPI Olt. The work was carried out with a good control throughout the stages of work, the final result being given by grades and classes of evaluation. Field units (TEO) which were calculated scores and grades were established quality are concrete forms that appear in certain areas (geographic and historical), territorial units of the ground as concrete forms of manifestation and expression on the surface land, the actual taxonomic rank lowest (ground variations).

**Key words:** agricultural, land, limiting factors, evaluation notes

### INTRODUCTION

Agriculture has major contribution to sustainable development of economy and society the economic and social opportunities that you give current and future generations. Agriculture not only support for biomass production or providing food sector of humanity, but the very basis existence of life. Agriculture must assume the responsibility of protecting soil and other environmental resources that can degrade.

Being a well-defined condition with a high variability in space but relatively stable over time, the pedological factors, by their major components are essential in characterizing certain areas of land surface (ȚĂRĂU, D., 2009).

Of course knowledge of natural conditions and features of the ecological potential of land area for various utilities and certain cultures have a major economic and social importance for both large farms and small producers.

The purpose of this paper is the soil, observed, described, analyzed in its complex with natural correlations among whom there so that the knowledge on physical, chemical and hydro, as well as information on natural factors, to develop the sound recommendations for the rational use of it. For example, the humus content of soil is a parameter that can influence soil properties such as bulk density and cation exchange capacity.

The objectives of evaluation and assessment of soil-soil units (TU), completed by pedological study are:

- identification and delineation of soil-soil units, resulting in the soil map and land
- establishment of land evaluation and suitability for agricultural uses.

News of evaluation work and evaluation of land stems from the fact that the earth, besides the acquisition of historical and natural body, is the most important means of production in agriculture and forestry and a good that is the subject property and therefore subject to market exchange with a certain amount of usage.

#### **MATERIAL AND METHODS**

This paper refers to an area of 2862 ha of agricultural land from which the categories of use: arable land = 2650 ha = 127 ha pastures, vineyards = 85 ha.

The geographical position of the municipality Fărcașele lies between 44°03'45 " -44°12 '15" north latitude and 24°22'30 " -24°30 '15" east longitude.

The research of ecopedological conditions , the ordering and data processing was done in accordance with the Developing of Pedological Studies Methodology (vol. I,II,III) developed by ICPA Bucharest in 1987 and the Romanian System of Soil Taxonomy (SRTS-2003).

#### **RESULTS AND DISCUSSIONS**

Fărcașele commune administrative territory is located in the central south of the county Olt, Caracal Plain, ca. 53 Km, Slatina and around the city at 11 Km from Caracal.

The territory is part of the plain village Fărcașele Caracal - the typical steppe region, dominated by the smoothness of chernozem and relief in steps and terraces formed by the lateral fields, which descends gently towards the edges. It is a loess plains and dunes with longitudinal valleys parallel. Also the vast alluvial plain belongs Caracal Olt, south of the confluence Oltețului with the Olt River.

Soil erosion is almost imperceptible, except the eastern slope of the built territory studied, which makes switching between meadow brook meadow Teslui Olt River. Tesluiului Valley is parallel to the valley Oltețului and boasts a rather meandering riverbed, with well-developed floodplain and low terraces upstream of the exit Olt meadow at Hotaran.

Fărcașele village relief can be synthesized from the following genetic types: the type of fluvial or alluvial plain of the river Olt, plain type with stepped terraces partially covered with loess and sand (LICA TUTLI., BĂLĂNESCU, D., 2010).

Lithology of surface deposits is quite varied and corresponding Levantine and Quaternary formations. Levantine represented by clays, marls, sands and gravels occur along the steep slope to the valley Teslui. Quaternary shallow-formed blanket most extensive and quite varied in relation to genetically distinguish lithology in which lithological complex following:

The complex occupies loess-located in plain area and terraces Olt loess cover both wind and dust and sand, which deluviale loamy in many areas are difficult to separate.

Alluvial complex - appears in the Olt meadow and gravel deposits is, boulders mass of sand.

Hydrography is represented by the Olt River, the most important river of the county bearing his name. Olt River crosses the territory Fărcașele NW. Olt River in the studied area on the right receives the tributary stream Teslui (I. PETRE, V. COTEȚ, VASELINA URUCU).

Teslui Creek, the point of confluence at Stoenăști has only an annual average flow of 1.42 m<sup>3</sup> / s calculated Resca station. Creek runs through the village Fărcașele Teslui NW-SE direction.

The studied area is a network of irrigation channels, some of which are highways. The central canal water is masterly. Fărcașele municipal territory is located above the groundwater aquifers following: plain and terraces of the Olt River. Groundwater is at different depths depending on the main form of relief. Thus, including terraces plain groundwater is at depths of over 10.01 m, almost not influence soil profile, and Olt meadow and meadow Teslui groundwater ranges from 0.51 to 5.00 meters.

Thermal regime belongs to the temperate continental climate. Analyzing thermal regime it is found that the annual values of air temperature determines the character of continental climate. Thus the mean monthly air temperature at the weather station (Caracal) of territory in the period 1980-2000 are about. 11.0 °C.

Rainfall regime had a decisive role both in developing a type of vegetation and soil in pursuit of specific processes. Regarding the precipitation we can say that they have the same temperature as the continental influence, being predominantly in the form of rain, but unevenly distributed. Average annual precipitation amounts in the weather station have a value of 492.4 mm Caracal (during 1980-2000). Analyzed monthly amount of precipitation in general do not satisfy the requirements of both crops.

Frost is a characteristic phenomenon seasons spring, autumn. The first frost days occur in October ( in the last decade of the month ), and the last day could occur even in April ( the first decade of the month ). Frost days are frequent in March and early April, less frequently after 15 April.

Wind regime contributed to a large extent the distribution of temperatures and precipitation. The dominant winds are chill wind from the east in winter and in summer Austrul wind.

Amid the general climate pattern caused by microclimatic issues arising within the village Fărcașele relief. This Olt meadow areas, drought is felt less, due to the influence of surface water and groundwater located between 0.51 to 5.00 m deep. At night, the temperature is low, the dew is formed greater phenomena of fog and frost are less common.

In lowland areas including terrace and ridge interfluvial subject to irregular wind vortex character coming on the Olt Valley, continental groundwater is high and deep over 10.1 m.

Slopes of northern exposure has Fărcașele territory, involving a greater sun exposure, a low water retention of precipitation, snow melting faster, a higher evapotranspiration.

From the viewpoint of the village microregion Fărcașele IS is micro-BR 22 / 5 - that climate warm- arid, with relief of the plain, reddish-brown soils are dominant (takes approx. 65.83% of the study) and micro-SA IL 30/12 - warm-arid climate, the landscape of meadow, alluvial soils are dominant (takes approx. 34.17% of the study).

At the municipality level Fărcașele, fertile soils are generally good, medium texture, granular structure that ensures a stable good aeration and good water and air permeability, good water retention capacity of useful and less resistance to soil tillage. They are planted with cereals, vegetables and vineyards.

Soil types encountered in this area are: aluviosol (eutric, gleic, softness, vertic), chernozem (typically the bill, argic) Eutricambosol (gleyed, typical); Preluvosol (softness,

typical); Gleysols (cernic, eutric) and Erodosol (cambic). Chernozem soil type is predominantly communal territory Fărcașele (approx. 60%), followed by aluviosol (approx. 35%), while other soil types Eutricambosol, Preluvosol, Gley and Erodosol), occupies a small percentage.

Conditional evaluation is an estimate of production potential of a territory for a certain mode of operation and for certain crops, through an index system of evaluation techniques and notes.

Indicators to characterize ecological environment is the natural conditions that characterize each unit Homogeneous Organic Territory, taking the synthetic biophysical parameters, expressed by coefficients of evaluation with different values according as the natural condition that affects use or plant requirements taken into account.

Thus the calculation of the evaluation notes that pedological study were taken into account the following indicators: 3C - average annual temperature of indicator 4C - Annual average rainfall - corrected values; 14 - gleyzation degree of soil, 15 - degree stagnogleyization; 16 - the degree of salinization of indicator 23 - Soil texture in the upper horizon, 33 - slope, 34 - land class exhibition, 39 - depth of groundwater, 40 - inundability land, 44 - degree of compaction; 63 - class response ground, 69 - degree of base saturation; 133 - Volume edaphic useful, 144 - reserve of humus in the 0-50 cm layer, 181 - class of excess surface moisture (table 1).

Each of the indicators listed have participated in the evaluation notes the establishment by a factor of 0 (zero) to 1 (one) as that is totally bad ownership (zero) or optimal (a) to use or plant requirements taken into account.

The notes of evaluation (weighted average) in natural conditions of the agricultural area in the municipality Fărcașele 2010. (table 2)

Table 2

Notes of evaluation in natural conditions of the agricultural area of Fărcașele

Agricultural use	Grade score of evaluation												
	I		II		III		IV		V		Average Classification		
	ha	note	ha	note	ha	note	ha	note	ha	note	ha	note	class
Arable	-	-	345	68	2011	55	289	36	5	2	2650	55	III
Pasture	-	-	83	64	39	57	-	-	5	13	127	60	III
Vines	-	-	85	72	-	-	-	-	-	-	85	72	II

If one compares the country's average score, average grade in the county and municipal territory Fărcașele average score, it appears that the main agricultural uses, the grade is above average evaluation marks on the country and on the use of pastures and vineyards, the it almost doubles in both the national average and the county (table 3).

Table 3

Evaluation notes for the main land use categories

Use category	România 1976	Olt County 2000	Municipal territory Fărcașele 2010
Arable	45	57	55
Pasture	31	33	60
Vines	35	48	72

Table 1

Indicators of ecopedological evaluation

N r. T E O	Codes of evaluation indicators																	
	3C	4C	14	15	16	17	23	33	34	38	39	40	44	63	69	133	144	181
1	11,5	0475	1	0	0	0	52	01	0	0	01,4	0	-05	6,1	79	175	140	1
2	10,5	0475	1	0	0	0	61	01	0	0	01,4	0	-05	5,6	79	175	140	1
3	10,5	0475	1	0	0	0	32	01	0	0	03,5	0	-15	6,1	79	138	140	1
4	10,5	0475	0	0	0	0	32	01	0	0	03,5	0	-15	6,6	87	138	140	1
5	10,5	0475	2	0	0	0	32	01	0	0	02,0	0	-25	6,7	87	138	140	1
6	10,5	0475	0	0	0	0	32	01	0	0	03,5	0	-15	6,1	87	138	090	1
7	10,5	0475	2	0	0	0	42	01	0	0	02,0	0	-05	6,1	79	138	090	1
8	10,5	0475	0	0	0	0	42	01	0	0	02,0	0	-05	6,6	87	138	090	1
9	10,5	0475	0	0	0	0	22	01	0	0	02,0	0	-25	6,1	79	088	045	1
10	10,5	0475	0	0	0	0	52	01	0	0	3,5	0	-05	5,6	79	175	140	1
11	10,5	0475	0	0	0	0	52	01	0	0	3,5	0	-05	6,1	79	175	140	1
12	10,5	475	3	0	0	0	52	01	0	0	02,0	0	+05	6,1	79	175	180	1
13	10,5	0475	4	0	0	0	61	01	0	0	01,4	0	+05	6,1	79	175	180	1
14	10,5	0475	0	0	0	0	61	01	0	0	02,0	0	+05	6,1	79	175	140	1
15	10,5	0475	3	0	0	0	61	01	0	0	02,0	0	-05	6,1	79	175	140	1
16	10,5	0475	5	0	11	0	52	01	0	0	01,4	0	-05	6,1	87	175	180	1
17	10,5	0475	5	0	0	0	52	01	0	0	01,4	0	-05	6,1	87	175	180	1
18	10,5	0475	5	0	0	0	42	01	0	0	01,4	0	-05	6,6	87	175	140	1
19	10,5	0475	5	0	0	0	42	01	0	0	00,7	0	-15	7,0	87	175	140	-
20	10,5	0475	2	0	0	0	52	01	0	0	3,5	1	-05	7,0	87	175	140	1
21	10,5	0475	3	0	0	0	52	01	0	0	02,0	1	-05	6,6	87	175	140	1
22	10,5	0475	5	0	0	0	61	01	0	0	01,4	0	+05	6,1	87	175	140	1
23	10,5	0475	3	0	0	0	42	01	0	0	02,0	0	-15	6,1	87	175	140	1
24	10,5	0475	3	-	0	0	52	01	0	0	01,4	0	-05	6,1	87	175	140	1
25	10,5	0475	0	0	0	0	42	01	0	0	15	0	-15	6,1	87	138	140	1
26	10,5	0475	0	0	0	0	42	01	0	0	15	0	-15	5,6	79	138	140	1
27	10,5	0475	0	0	0	0	52	01	0	0	15	0	-05	5,6	79	175	140	1
28	10,5	0475	2	0	0	0	42	01	0	0	15	0	+15	6,6	87	175	140	2
29	10,5	0475	0	0	0	0	42	03	0	0	15	0	-15	6,1	87	138	090	1
30	10,5	0475	0	0	0	0	52	03	0	0	15	0	-05	5,6	79	138	090	1
31	10,5	0475	0	0	0	0	42	01	0	0	07,0	1	-05	6,1	87	138	090	1
32	10,5	0475	0	0	0	0	32	01	0	0	15	0	-15	7,0	87	138	045	1
33	10,5	0475	7	0	0	0	52	01	0	0	00,2	0	-05	5,6	79	175	090	1
34	10,5	0475	7	0	0	0	52	01	0	0	00,2	0	-15	6,1	87	175	090	1
35	10,5	425	0	0	0	0	42	12	2	0	99,0	0	-05	6,6	87	138	090	1
36	10,5	0475	0	1	0	0	42	01	0	0	15	0	-15	6,1	87	175	090	1

Comparing ecological conditions (climate and soil) of a territory, environmental requirements of cultivated plants of interest, results of evaluation class eco quantitative expression of production per hectare it is possible to achieve in normal conditions and an optimal climate technology (table 4).

Table 4

Productive potential of land within the village Fărcașele

Agricultural culture	Class	Note	Kg/point	Potential production kg/ha
Grain (Wheat)	II	62	60	3.720
Pasture	II	60	200	12.000
Vine for wine	II	72	150	10.800
Vine for grapes	II	72	170	12.240

For simplicity of evaluation score was calculated for the wheat crop (the reference product), and if you want production capacity for other cultures can be used to establish the quantity convertibility coefficients of these products.

**CONCLUSIONS**

Choosing the appropriate technology of exploitation, conservation and cultural improvement in the current real productivity growth implies a detailed knowledge of all

ecological determinants.

Systematic pedological and agrochemical soil mapping conducted by the Office of Pedological and Agrochemical Studies in our country provides valuable data on the evolution of soil quality, establish and implement differentiated culture technologies, land evaluation and determining suitability for various crops, foundation works and land reclamation ameliorative technology, organization and systematization of territory, etc.

Such detailed knowledge of productive and technological characteristics of the contributing, restrictive or limiting factors of agricultural production, both in terms of the actual event and in terms of real possibilities for modifications, may be better for decision-making bodies (government, administration local) a valuable tool for achieving the most appropriate practical measures for the benefit of plant biomass production to improve its conditions of human life and the entire community.

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