QUANTITATIVE EVALUATION OF LAND, IN THE S.C. SPICU POBORU, OLT COUNTY

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Abstrac: *This paper is part of PhD research theme entitled foundation ecopedological cadastral value of the land in the county of Olt and characterize the arable land in the SC SPICU Poboru, Olt County. From the research field points were established to characterize the reprezentative researched area, opening a total of 3 profiles, from which soil samples were collected pedogenetic horizons. The soil samples were analyzed in the Office of Pedological and Agrochemical Studies Olt and standards approved by the Standars Association of Romania (ASRO). In the research field and laboratory test results were determined soil types: Luvisols vertic the plots 115 and 120 and Planosols vertic albic the plot 122. The evaluation cadastral determines how many times an area is better than another, given the fertility of, reflected by the yields they provide. Evaluation marks (under natural conditions) separates quality agricultural land of terms of their quality for agricultural use and the use by separates them in terms of productions capacity. Of land for under natural conditions in conditional evaluation, ecological characterization participated indicators to determine the factors limiting evaluation marks. For the characterizations climatic elements were used at the meteorological station data Streharet Slatina. Weather data from meteorogical station Slatina ranges from 11.1 to 12.0^0 C isotherms multiannual average (11.1^{0}C for both 1980-2011 and the 2010-2011). Precipitations regime is characterized by an average annual of 575 mm (570.6 mm for the period 1980-2011 and 597.5 mm to 2010-2011), they manifested more in the form of rain. For the category of arable note evaluation marks arithmetic mean of evaluation marks for eight crops namely: grain, barley, maize, sunflower, potato, sugar beet, soybean, peas and beans. In the land investigation (SC SPICU Poboru) situation is as follows: plot 115 (TEO 1), note 66, class II, plot 120 (TEO 2), note 66, class II, plot 122 (TEO 3) note 56 class III.*

Key words*: soil resources, cadastral evaluation, quality classes, crops, estimated production, production undertaken,*

INTRODUCTION

The soil is considered the most general term used in soil science and agriculture today.

The soil is considered a natural corps that develops its own form of organization and morphology, constituting development environment of higher plants and the existence of animals and man.

Economic value of agricultural land is determined by the operation evaluation marks is performed in terms of the natural characteristics of each piece of land acquired from all points of viw homogeneous (TEO), with a certain production capacity, bringing a certain income net if used in a more or less corresponding.

The method evaluation marks is estimated production capacity of land with the most important environmental conditions: relief, resources, climate, hydrology and soil characteristics.

Based on field and laboratory research, this paper groups the land quality classes according to Elaboration Pedological Studies Methodology, volume II, published by ICPA Bucharest in 1987.

METHODS AND MATERIALS

To substantiate ecopedological cadastral value of land have used two interrelated research methods namely indirect methods (documentation) and direct methods (conducting research on soil cover on the ground).

To achieve the objectives proposed research method was used in documentation (Dorin Țărău, evaluation and valuation of land with elements of foundation soil, Timisoara Agroprint Publishing 2009), and research on soil cover field (recognition pedogeographic the county of Olt, research itself through soil profiles, soil and morphogenetic study of soil sampling pedogenetic horizons (according to Romanian System of Soil Taxonomy, 2003, 2012 and Elaboration Pedological Studies Methodology, Vol I, II, III, developed by the ICPA Bucharest).

This paper is part of PhD research theme entitled foundation ecopedological cadastral value of the land in the county of Olt and characterize the arable land in the SC SPICU Poboru, Olt County.

Research plots were used 115 (20ha), 120 (50 ha) and 122 (30 ha) of SC SPICU, Poboru communal territory, each of which has specific characteristics which require to determine the best use of their.

Of productions achieved information, applied technology, costs were obtained from Mr. Mihai Nicola engineer, manager SC SPICU Poboru.

U.A.T. Poboru is located in the central northern Olt county and southern Piedmont Cotmeana, about 10 km north-west of Scornicesti.

Poboru land area is crossed by many valleys with intermittent discharge and a divergent way.

Poboru land the altitude is between 303 m (hill Cacova) in the north and 260 m to the south of the territory.

The relief comprises the following steps morphological interfluves, terraces and meadows.

Interfluves have the appearance of relatively large bridges, are generally separated by deep valleys, formed as a result of basic hydrographic network with very low levels.

Are well defined terraces along the main valleys: Plapcea Great, Plapcea Mino,r Albesti, Teius.

The meadows is the lowest level morphology within the study area.

Parent material consists of eluvial material and subjacent rock consists of clay contracts.

Surface hydrographic network consists of several valleys (Albesti, Plapcea Great, Plapcea Minor, Teius) prominently in relief.

Groundwater is approx. 20 m on interfluvial fields, between 5-10 m threads valley and between 3-5 m in the meadow.

Territorial Administrative Unit Poboru falls in the northern county of Olt, with humid continental climate with shade, with mild winters and warm summers.

For the characterization climatic elements were used at the meteorological station data Steharet-Slatina.

Weather data from meteorological station Slatina ranges from 11.1 to 12.0 ° C isotherms multiannual average (11.1 ° C for both 1980-2011 and the 2010-2011).

Highest monthly average temperature was 25.6 ° C, recorded in August, 1992 and the lowest monthly average was -7.0 ° C, recorded in January 1985.

Precipitations regime is characterized by an average annual of 575 mm (570.6 mm and 597.5 mm for the period 1980-2011 to 2010-2011), they manifested more in the form of rain.

In the mean monthly amounts recorded a substantial increase in July (maximum 200.8 mm in 2005) and august (maximum 179.8 mm in 2007), followed by a sharp decline in early autumn.

Absolute maximum annual quantities were recorded at the meteorological station Slatina in 2005 (999.1 mm).

Hall of existing cadastral the bookkeeping territory Poboru, Olt county, agricultural area of land is 4616 ha.

The soils were formed and evolved as a result of the complex interaction occurs between the upper lithosphere biosphere, atmosphere and hydrosphere.

Soil types found in the territory Poboru are rererezentate by: Regosols, Fluvisols, Cambisols, Preluvosol, Luvisols, Planosols, Vertisols, Gleysols. The dominant soils are represented by the: Luvisols (about 46% of the agricultural area) and Planosols (about 20% of the agricultural area).

Soil types within the perimeter investigated are: Luvosols vertic plots identified in the 115 and 120 and Planosols vertic albic identified plot 122.

RESULTS AND DISCUSSION

Evaluation the cadastral land of thorough knowledge is complex operation conditions of growth, development and fructification of plants and determining thereof degree of favorability for a particular use or for certain crops through an index of evaluation techniques and marks.

Evaluation the cadastral determines how many times land is better than another, given the fertility of, reflected by the yields they provide.

To calculate evaluation marks from many environmental conditions that characterize each unit of homogeneous ecological area (TEO), defined in the researched territory, and chosen those considered most important, easily and accurately measurable, called indicators of evaluation (Table no. 1):

*Indicator 3C - Average annual temperature - corrected values for the studied area which has average 11.5 ° C (extremely high);

*Indicator 4C indicator - average annual rainfall - values corrected that for most of the territory studied the overall value of 0575 (moderate);

*Indicator 15 - degree stagnogleyzation: (1-stagnogleyzation in depth and 2 stagnogleyzation weak);

*Indicator 23 - soil texture in the upper horizon (42 – loam, 52 - loam argillaceous);

*Indicator 33 - slope: (01 - horizontal);

*Indicator 39 - groundwater depth - (15.0 - high);

*Indicator 44 - total porosity - (weak compacted to +15 +05- - compacted moderate);

* Indicator 63 - The surface soil reaction - (5.2 - moderately acid and 6.1, 6.6 - weak acid;

*Indicator 133 - edaphic volume classes - by meeting code: 175 (excessive);

*Indicator 144 - reserve of humus in the layer 0-50 cm - (140 - and 180 medium - high).

Each of the indicators listed participated in establishing evaluation marks with a coefficient of 0 (zero) to 1 (one) as the appropriation that is totally unfavorable (zero) or optimal (one) for use or plant requirements considered.

Land under natural conditions in conditional evaluation, each of the indicators of ecological characterization, participated in establishing evaluation marks the restrictive coefficients.

Evaluation marks in agricultural use and culture to the product obtained by multiplying by 100 coefficients indicators that directly to the establishment of evaluation marks.

For the category of arable note evaluation marks arithmetic mean of evaluation marks for eight crops namely: grain, barley, maize, sunflower, potato, sugar beet, soybean, peas and beans (Table no.2).

The lowest note evaluation marks has potato and wheat largest submits.

At ground level investigated (SC SPICU Poboru) situation is as follows (Fig. 1):

* Plot 115 (TEO 1) - 20 ha arable land, note 66 class II
* Plot 120 (TEO 2) - 50 ha arable land, note 66 class II
* Plot 122 (TEO 3) - 30 ha arable land, note 56 class III

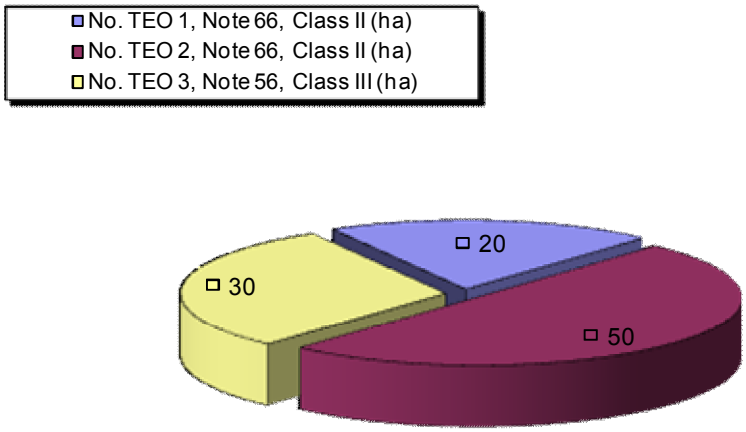

Fig. 1.1 Situation of quality classes and evaluation marks for SC SPICU POBORU

For the 3 plots were drawn sheets technological wheat, corn and sunflowers, which were materialized the technology applied for each crop separately (Fig. 2).

From the point economic perspective, the farm was pursued gross profit (operating profit) achieved by capitalizing production.

Following the harvest production was found that the 2010 grain crop production obtained was higher than that provided in the schedule to the expected technological and further evaluation marks and corn and sunflower production obtained was lower than expected production.

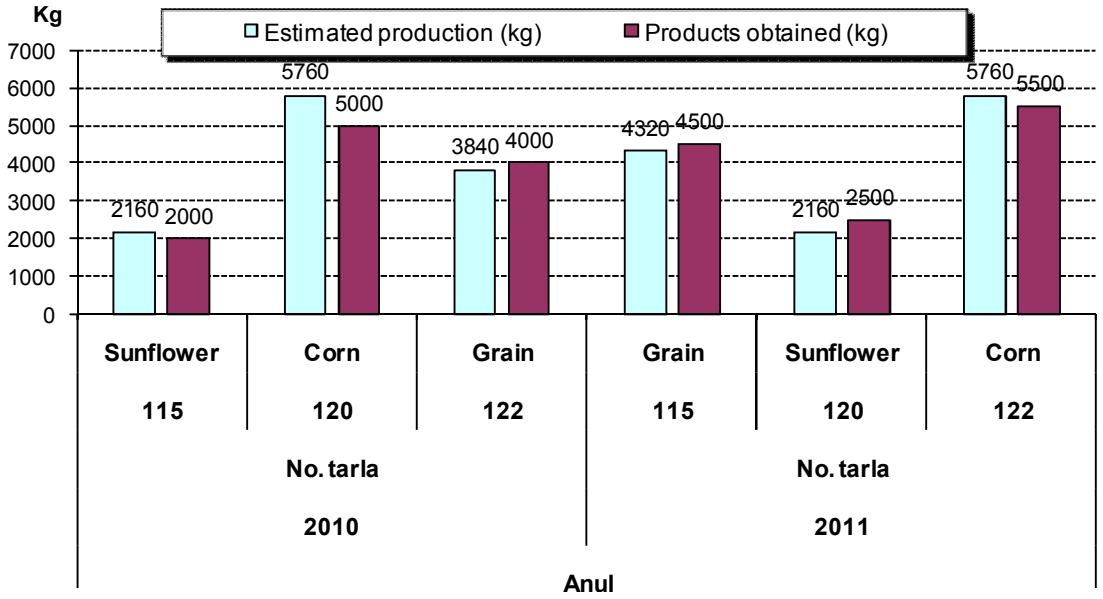

Fig. 2 Production compared to the estimates made according to grade of evaluation
SC SPICU POBORU

Table 1

Ecopedological evaluation marks indicators

No. TEO	Type of soil	Codes of evaluation indicators																	
		3C	**4C**	**14**	**15**	**16**	**17**	**23**	**29**	**33**	**38**	**39**	**40**	**44**	**63**	**69**	**133**	**144**	**18 1**
1	Luvisols	11,5	0575	0	1	00	00	52	00	01	00	15,0	0	+15	6,1	96	175	180	1
2	Luvisols	11,5	0575	0	1	00	00	52	00	01	00	15,0	0	+05	6,6	96	175	140	1
3	Planosols	11,5	0575	0	2	00	00	42	00	01	00	15,0	0	+05	5,2	96	185	180	2

Table 2

Evaluation marks of TEO

No. TEO	The use of TEO	The surface TEO(ha)	GR	OR	PB	FS	CT	SZ	SO	MF	IU	IF	CN	LU	TR	LG	AR
1	A	20	72	72	72	72	47	52	65	72	72	41	65	72	45	72	**66**
2	A	50	72	72	72	72	47	52	65	72	80	45	65	80	45	64	**66**
3	A	30	64	56	64	56	52	52	50	56	40	35	43	48	45	56	**56**

Table 3

The production per hectare possible to obtain under normal climate
(Kg of product at point of evaluation after Teaci D. and collab., 1980)

No. TEO	Culture	Class	Note	Kg/point	Productive potential Kg / ha
1	Grain	II	72	60	4.320
2	Grain	II	72	60	4.320
3	Grain	II	64	60	3.840
1	Corn	II	72	80	5.760
2	Corn	II	72	80	5.760
3	Corn	II	64	80	5.120
1	Sunflower	II	72	30	2.160
2	Sunflower	II	72	30	2.160
3	Sunflower	III	56	30	1.680

For 2011, the production obtained for grain and sunflower yields were higher than the estimated and corn production obtained was lower than estimated.

Also on technological fiches is found that the 2010 corn crop that produces greater profit and for 2011 sunflower produce the greatest profit.

By comparing ecological conditions (climate and soil) researched the land with ecological requirements of crops of interest, results of evaluation class eco quantitative expression it is possible to obtain production per hectare under normal climate and technology to the optimal extent (table no. 3).

CONCLUSIONS

Soil types encountered in the field are researched and Planosol Luvisol.

For SC SPICU Poboru can conclude that land is researched following quality classes for 115 plots (20 ha) and 120 (50 ha), class II, note 66, and the plot 122 (30 ha), class III, note 56.

For the three crops (grain, corn and sunflower), production obtained were higher than those the estimated for grain in 2010 and grain and sunflower in 2011.

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