MAPPING SOILS ON THE FARM CRISTESTI, JUD.IASI

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Abstract: Agricultural cadastre is to provide technical and economic data about agricultural land, which are permanently updated for a good knowledge of agricultural land. As a subsystem of the general cadastre, the agriculture information system can provide technical and economic data about agricultural lands due to determination the categories and subcategories of use the parcels of land, topographical position and configuration of each plot, agricultural land quality and their classification in quality classes, the economic taxable value of land, agricultural land elements to determine suitability for various agricultural uses. For mapping of soils at the Cristesti farm soils were analyzed both in field and laboratory stages. In the field phase were placed and performed soil profiles, were defined land units and were taken soil samples for laboratory analysis. Using the results of laboratory analysis and the recommendations of the pedological study was prepared the soils map, the arable land suitability to irrigation and drained conditions map and a map of agropedoameliorative and special works.

Key words: soil survey, agricultural land, agricultural cadastre

Introduction

Pedological mapping consists in identification the field, in delimitation and research types, subtypes of soil existing on the land for getting graphic data and necessary descriptive inventory and assessment of soil resources.

Soil Survey at farm Cristesti S.C. COMTOM SA Tomesti, Iasi County, aims to provide data needed to solve the following problems: territorial planning and development of agricultural production, rational use of land and raising the production potential of land, establish more homogeneous sole and crop rotations, soil and land forecasting behavior in terms of irrigation, determination of appropriate agricultural technologies rational system for exploitation of drainage-drainage-irrigation.

Methods and materials

Soil Survey of agricultural land, of territories in Tutora and Ungheni, was executed in 1997 (In field phase by pedologists Gheorghe Cucu, Daniel Curea and Raileanu Emanoil and in office phase by Emanoil Raileanu), using "Elaboration methodology of soil studies" Part I has, I.C.P.A. For the study were performed 29 main sections, side sections 19 and 48 control profiles. Of the main profiles were collected 128 soil samples were analyzed in the laboratory OSPA Iasi and in the laboratory phase were performed 894 physical and chemical soil analysis.

Land mapped comprises a single body located in common plain of the river Prut (located in the east) and river Jijia (In the west), in the north is bounded by the railway Cristesti-Ungheni and south is the road Holboca Tutora.

Pedological memo includes analytical database and graphics for an area of 721.08 ha of which 405.64 ha of agricultural land located in Tutora and 315.44 hectares of agricultural land located in Ungheni. Graphic database drawn at scale 1: 10000 soil map includes also the suitability of land for irrigated arable regime, drained and map measures and works agropedoameliorative and special.

Grouping the lands in suitability classes represents an assemble and in the same time an ordering according to the skills they have for arable under the arrangement for irrigation and facilities to combat excess moisture, specifying characteristics that limit their use intensive.

Grouping is done in classes, subclasses, groups and subgroups, in the nature and intensity of factors limiting production. Restrictions can be applied to existing conditions that reduce yields, and the danger of, by operation of degradations. The analysis of restriction factors needs improvement and measures necessary to optimize the operation. Some restrictions are improved by planning, land with such restrictions, going to upper classes of suitability and favorability. Land generally fall into six categories of suitability, marked with roman numerals (I - VI), the grade without any restrictions, and the sixth grade with very severe restrictions.

On the farm Cristesti area was identified classes II, III and V whose meaning is the following:

Class II: lands with good suitability with small limitations in the use of the arable where excess moisture (poor) occurs in some years for periods of 5-15 days. Presents danger potential of secondary salinization due to rise of the groundwater and evaporative water loss through.

Class III: land suitability middle, with moderate limitations when used as arable, the excess moderate humidity (15-60 days in recent years), salty, smooth texture, compaction.

Class V: land with severe limitations for agricultural use due to excess moisture, fine texture, neuniformitatii land.

By digitizing and computerized precesare to obtain digitized model of the territory studied using four trapezes in scale 1: 10,000 with the following nomenclature L-35-32-A-d-4; L-35-32-B-c-3; L-35-32-C-b-2; L-35-32-D-a-1.

Using digitized model cartogram plan was made with ground units scale 1: 10000 and map measures and works and special agropedoameliorative.

Cadastral plan with ground units cartogram (U.S.)

The paper contains the cadastral plan with ground units cartogram that are past ground units (fig.no.1) and plan legend with ground units, surface texture, soil formation rock, landform that is, groundwater depth, and percentage of total surface area of the territory mapped (tab.no.1).





There were identified 17 surface soil cartographic units (U.S.) that after 'novel system of soil classification' 1980 were included in these two classes:

- soil hydromorphic class:
- typical puddle on the average fluvial deposits, clayey clay (US1);

- typical puddle on the average fluvial deposits, clay clayey (US2);

- typical puddle with low-salinity between 50-100 cm, the river deposits fine, clayey (US3);

- marshy puddle, on the river fine deposits, clay clayey (US4);

- low-saline puddle and alcalizata between 20-50 cm, on the fine river deposits, clay (US5);
- moderately saline puddle on the fine fluvial deposits, clay (US6);
- soil class neevoluate

- mollic alluvial soil, on average fluvial deposits, silty (US7);

- mollic alluvial soil, on the fine river deposits, clay clayey (US8);

- mollic alluvial soil, gleyed based on coarse fluvial deposits, clayey clay / sandy clayey (US9);

- mollic alluvial soil, moderately gleyed, on the fluvial deposits, clay clayey (US10);

- mollic alluvial soil, strongly gleyed, on the fluvial deposits, clay clayey (US11);

- mollic alluvial soil, gleyed based on fluvial deposits, clay (US12);

- mollic alluvial soil, based gleyed, poorly salinated between 50-100 cm,on the fluvial deposits, clay (US13);

- mollic alluvial soil, poorly salinated intre0-50 cm and moderate between 50-100 cm, slightly gleyed based on fluvial deposits, clay (US14);

- alluvial soil and moderate-salinated alcalizat the fluvial deposits, silty (US15);

- alluvial soil and moderate-salinated alcalizat the fluvial deposits, clay (US16);

-salinated strong alluvial soil between 50-100 cm, strongly gleyed, on the fluvial deposits, clay clayey (US17);

Agricultural pedo improvement and special works and measures map

The main limiting factors of agricultural production on the farm Cristesti area are: temporary or prolonged excess moisture, soil salting and high clay content. Agricultural pedo improvement measures and works refer to deep loosening on the drained background, gypsum amendment, washing of soluble salts drained background. In figure 2 is shown on the measures and works agropedoameliorative map.



Fig.2 Agricultural pedo improvement and special works and measures map

No.	Surface		Surface	Rock	Form of relief			Ground
U.S	ha	%	texture	solidification				water
								depth (m)
CLASS SOILS HYDROMORPHIC								
			LA	fluvial deposits	plain	with	depression	2.0-2.5
1	17.34	2.40			areas			
			AL	fluvial deposits	plain	with	depression	2.0-2.5
2	121.34	16.83			areas			
			AL/AG	fluvial deposits	plain	with	depression	3.0-4.0
3	53.94	7.48			areas			
			AL	fluvial deposits	plain	with	depression	0.4
4	14.48	2.01			areas			
5	61.21	8.49	AG	fluvial deposits	plain			2.0-2.5
6	9.24	1.28	AG	fluvial deposits	plain			3.0-4.0
CLASS SOILS NEEVOLUATE								
7	16.68	2.31	LL	fluvial deposits	plain			4.0-5.0
8	43.39	6.02	AL	fluvial deposits	plain			3.0-4.0
9	32.7	4.53	LA/NL	fluvial deposits	plain			2.5-3.0
10	26.65	3.70	AL	fluvial deposits	plain			2.5-3.0
11	52.67	7.30	AL	fluvial deposits	plain			1.0-2.0
12	94.29	13.08	AG	fluvial deposits	plain			2.5-3.0
13	103.68	14.38	AG	fluvial deposits	plain			3.0-4.0
14	14.97	2.08	AG	fluvial deposits	plain			3.0-4.0
15	31.52	4.37	LL	fluvial deposits	plain			3.0-4.0
16	14.3	1.98	AG	fluvial deposits	plain			3.0-4.0
17	12.68	1.76	AL	fluvial deposits	plain			2.5-3.0

Table1. Soil map legend

Results of mapping soils on the farm Cristesti

The area studied is located in the floodplain of rivers Prut and Jijia in micro-zone climatic alluvial soils, with moderately warm climate, semi wet. Form of relief is the meadow. And meso forms of microrelief are represented by micro depressions and depression areas larger low banks.

By geologically point of view, the entire surface belongs to the Holocene, consisting of fluvial deposits, coarser fluvial deposits at the base and sometimes fine saline at the top.

Hydrological regime of the soil, after work hydroameliorative, has changed in terms of physical, chemical and biological properties as well as increased risks such as compaction, salinization and excess moisture.

Evolution was influenced by the microrelief soil, groundwater, water overflows and Prut Jijia, granulometric composition. Agricultural lands were divided into classes, subclasses, groups and subgroups according to the skills they have for arable arrangement under irrigation and facilities to combat excess moisture.

Recommendations made for each group to the subgroup refers to:

- Unsystematic arrangement of ditches and drains, land leveling, deep loosening, ameliorative cultures to remove excess moisture or prolonged temporary;

- Amendment with phosphogypsum, washing soluble salts in fitting drainage, salinity and alkalinization tolerant crops to reduce soil salinity and alkalinity;

- Deep loosening, apply organic fertilizer in large quantities, alternating of plowing depth, ameliorative crops to improve physical characteristics;

- Raising the content of humus and nutrients, correct alkaline reaction, application of watering in the growing season to improve some chemical traits.

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