STUDIES REGARDING THE QUALITY OF AGRICULTURAL LANDS FROM ORȚIȘOARA LOCALITY PERIMETER, TIMIȘ COUNTY

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Abstract

Located in the northern part of Timis County, on Route 69, the town Orţişoara, village resident with the same name, lies at a distance of 24,1 km from the City.

Orţişoara village covers an area of 12960 hectares, of which 12,907 ha is agricultural land.

The Orțișoara village is situated in Vingăi Plain. It is situated in the northern part of the Timiș county and southern part of the Arad county is limited boundary between the two counties.

The main soil types from Orţişoara locality studied in this paper is Gleyc chernozem, Haplic luvisol and Haplic gleysol.

Evaluation marks have been calculated according to the Elaboration Pedological Studies Methodology vol. I, II and III.

Knowing evaluation marks we can calculate economical efficiency, for the three soil types studied, for grain, maize and sun-flower. Economic comparison was obtained by multiplying production with 0,62 ron/kg at grain, 0,5 ron/kg at maize and 1 ron/kg at sun-flower, these sums representing the price per kg charged in the summer of 2014.

Key words: soil quality, soil types, evaluation mark, chernozem, luvisol, gleysol.

INTRODUCTION

The area falls within the Piedmont Plain village of Vingăi, part of the great plains of the Tisza. This high plains, valleys fragmented nature piedmont, with the general direction southwest drain and numerous crovuri shapes and sizes, depending on altitude, allows subdividing the land into three sectors:

Seceani sector which has the highest elevation in the Piedmont Plain Vinga (187.7 m at the point Luda bar) exhibit fairly narrow plateaus, deep valleys fragmented 40-80 m and 20-70 m wide, generally slopes accented 10-25%;

Orţişoara-Vinga sector, with an altitude of 150-170 m, has an energy relief more subdued than previous sector, plateaus and slopes largest lower slopes, varying between 10-18%;

Călacea-Barateaz Satchinez sector, with an altitude of 100-130 m, is the lowest portion which, from the western part of the village Călacea, very smooth transition to the low plain, showing very broad plateaus and small

land fragmentation conducted by valleys with a depth of 5-10 m with moderately inclined slopes.

MATERIAL AND METHOD

The evaluation marks land for natural conditions, each of the above indicators participate in setting evaluation notes by a factor of evaluation which ranges between 0 and 1 as the appropriation that is totally unfavorable or optimal requirements use or plant considered (Annexes 3-1 to 3-18, MESP, 1987, vol. II).

For about half of these indicators is provided a single set of coefficients. For the other half provided more series of factors related to their interdependence with other indicators. Thus the average annual rainfall series coefficients differ according to the average annual temperature for gleyzation with the state landscaping (drained or undrained) texture in relation to the total porosity, for groundwater, with the state planning (drained or undrained), precipitation and texture, the porosity, texture with respect to the reaction in the degree of saturation, the amount edaphic, with respect to precipitation and humus reserve in relation to the texture. Note of evaluation by use culture product obtained by multiplying 100 coefficients of the 17 indicators directly involved in setting evaluation notes:

$Y = (x1, x2, x3 \ldots ..x17) X 100$

in which:

Y = evaluation mark

x1, x2, x3 ... ..x17 = coefficient value (17 indicators)

For example, when all indicators are the coefficient equal to 1 is the maximum value evaluation notes, ie 100.

Even if only one of the indicators has a coefficient of 0 (zero) grade of evaluation is 0 (zero) as any value multiplied by zero is worth zero.

Since production in agriculture are reflected in the economic results that differ greatly from one area to another, variability in production levels at the same level of labor costs and materials brings a differentiation strong global income and net hectare costs production and therefore the profitability of agriculture, forestry, etc.

In their historical development, the work of evaluation or assessment cadastral (estimates agro-forestry) operated from the beginning with this notion, taking them as the sole criterion reference. The validity of these criteria is not less important any day, but it gaining facets of sustainability. Determining levels of economic indicators is carried inland current accounting and record using data from accounting reports from always to

estimate technological works sheet of each of the crops cultivated in the reference area.

Calculation of direct and indirect costs of production and overall income from crop production makes it possible to calculate net income per hectare, both in each culture, and the whole farm.

Evaluation marks for wheat and maize were calculated using the methodology developing soil studies.

RESULTS AND DISSCUSIONS

For wheat crop chernozem has obtained 91 points being located in first fertility class and glezsol won 56 points being located in V fertility class.

For maize chernozem obtained 90 points being located in second fertility class and gleysol obtained 64 points being located in IVth fertility class.

For sunflower crop chernozem obtained 90 points being located in second fertility class and gleysol obtained 64 points being located in IVth fertility class.

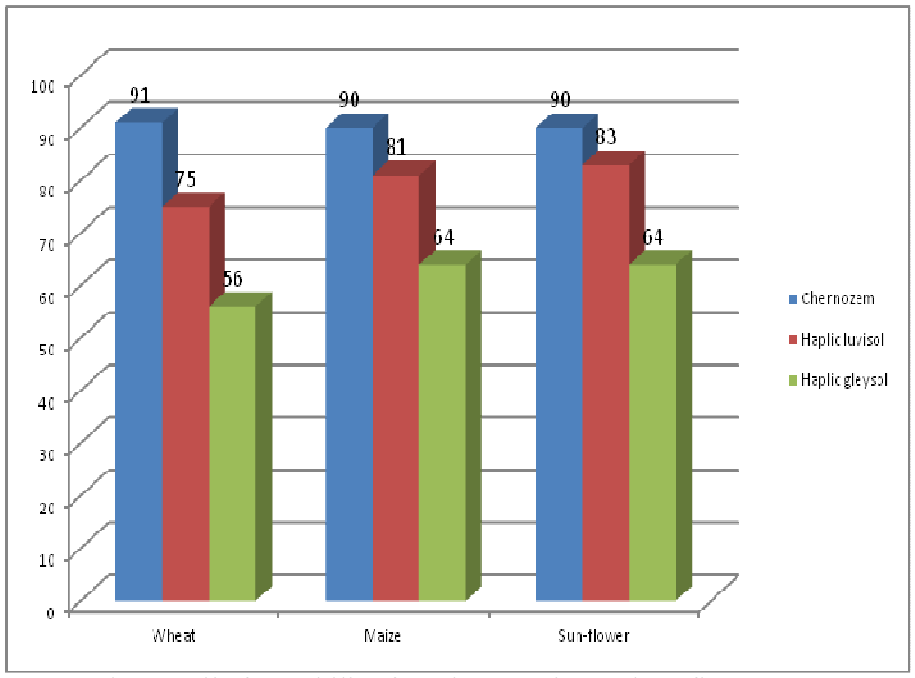

Fig. 1 Soils favorability for wheat, maize and sunflower crops

Natural potential of chernozem for wheat crop is 5460 kg / ha and was obtained by multiplying evaluation mark 91with 60 kg / evaluation point. The output from the study conducted on this type of soil was 6200 kg / ha.

Natural potential of haplic luvisol for wheat crop is 4,500 kg / ha and was obtained by multiplying evaluation mark 75 with 60 kg / evaluation point. The output from the study conducted on this type of soil was 5500 kg / ha.

Natural potential of gleysol for wheat crop is 3360 kg / ha and was obtained by multiplying evaluation mark 56 with 60 kg/evaluation point. The output of this type of soil was 4,200 kg / ha .

The natural potential of soils is lower than the yields being obtained.

Natural potential of chernozem for corn crop is 6750 kg / ha and was obtained from the product between the evaluation mark 90 with 75 kg/ evaluation point. The output of this type of soil was 8,000 kg / ha .

Natural potential of haplic luvisol for corn crop is 6075 kg / ha and was obtained from the product between the evaluation mark 81 with 75 kg/ evaluation point. The output of this type of soil was 7,500 kg / ha .

Natural potential of gleysol for corn crop is 4800 kg / ha and was obtained from the product between the evaluation mark 64 with 75 kg/ evaluation point. The output of this type of soil was 7,000 kg / ha .

Maize production obtained from the three soil types is greater than the natural potential of soils.

Natural potential of chernozem for sunflower crop is 2,700 kg / ha and was obtained from the product between the evaluation mark 90 with 30 kg/ evaluation point. The output of this type of soil was 3,500 kg / ha.

Natural potential of haplic luvisol for sunflower crop is 2490 kg / ha and was obtained from the product between the evaluation mark 83 with 30 kg/evaluation point. The output of this type of soil was 3,200 kg / ha.

Natural potential of gleysol for sunflower crop is 1920 kg / ha and was obtained from the product between the evaluation mark 64 with 30 kg/ evaluation point. The output of this type of soil was 3000 kg / ha.

The output of sunflower crop in three soil types is greater than the natural potential of soils.

To highlight the economic efficiency of the main soil types that we studied for growing wheat, maize and sunflower, we have increased the natural potential of each type of soil in part, to the sales price in 2014 of 0.62 RON / kg wheat, 0.5 RON / kg maize and 1 RON / kg sunflower.

The harvest wheat crop on the main types of soils studied is higher than the natural potential of these soils.

The natural potential of the main types of soils for maize is lower than the harvest.

The natural potential of the main types of soils for the cultivation of sunflower is lower than the harvest.

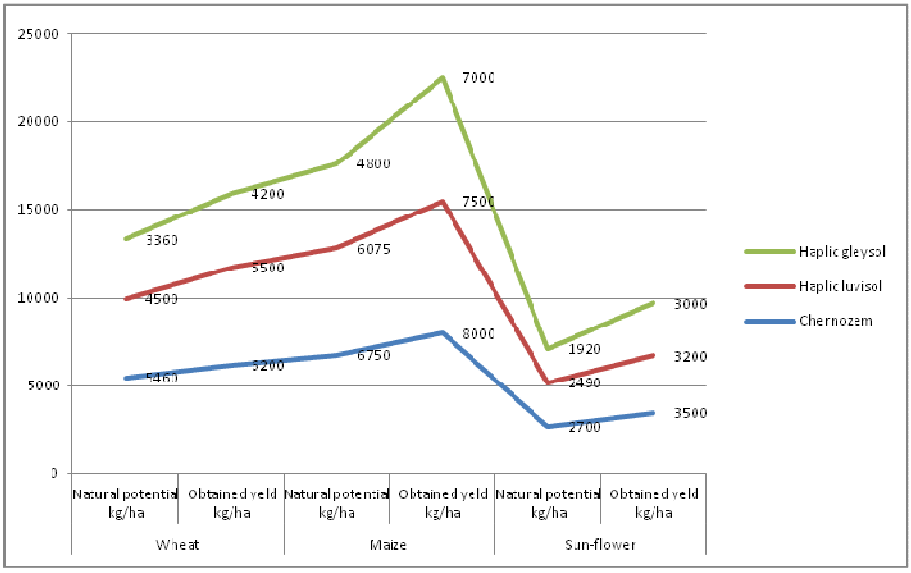

Fig. 2 Natural potential and yeld obtained on wheat, corn and sunflower crops

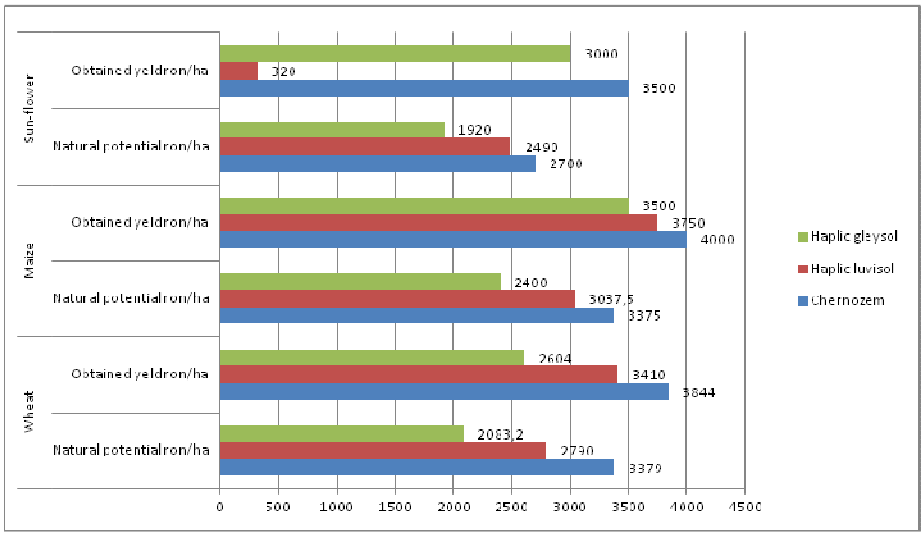

Fig. 3 Economic efficiency of the main soil types for wheat, corn and sunflower

CONCLUSIONS

Crop production can be done in various conditions: natural ecosystems (more or less anthropogenic modified) crops extensive or intensive under the influence of a cosmic-atmospheric factors and conditions (light, temperature, precipitation, etc.) and telurico-edaphic (relief, lithology, hydrology, physical properties, hydro and soil chemical) changed differently in time and space of human intervention that requires an urgent need thorough understanding of all determinants in terms of productive capacity, in order to choose the appropriate technology for production;

Knowledge of natural conditions and regional peculiarities of the environmental potential of farmland for the main crops of particular importance to define capacity and differentiated level of production that can be achieved;

Production of plant biomass being carried out under the action of prevailing environmental factors (natural or modified by man) detailed knowledge of the production capacity of each portion of territory when said process can provide for decision makers a tool for choosing work processes that to promote efficient use of soil resources.

The soils in the investigated area were formed and evolved through the complex interaction of factors pedogenetical of which the most important are: topography, groundwater, parent rock, climate, vegetation, man.

A cause of poor yields can be achieved without chemical fertilizers administration consider an appropriate fertilization plan and without taking into account the soil nutrient reserves, expected yield and specific consumption of that crop.

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