

STUDY OF LIMITING FACTOR IN FIELD SOIL FERTILITY FROM TEREMIA MARE LOCALITY, TIMIȘ DEPARTMENT

Lațo Karel Iaroslav*, Niță Lucian Dumitru*, Alina Lațo*, Casiana Mihuț*

*Banat's University of Agricultural Sciences and Veterinary Medicine Timișoara, 119 Calea Aradului, 300445 Timișoara, Romania, e-mail: iaroslavlato@yahoo.com

Abstract

This paper is a study of soil fertility improvement methods in Plain River. The different types and groups of genetic soil types existing today in the perimeter are the result of the actions sought in time and space complex pedogenetic factors (underlying rock, landscape, climate, vegetation, hydrography, hydrology, fauna) plus the influences caused by human actions from draining and drainage works to intensive agriculture today.

Soils formed in these conditions are a relatively recent stage of soil formation as a result of having little time out of the water. The process of soil formation is relatively recent and their direction of development is dictated largely by the microrelief forms they occupy and thus the groundwater level in the profile, and the nature of parental rocks.

Key words: Salted, texture, compactness, unevenness, excess moisture

INTRODUCTION

Teremia Mare commune in Timis County, the geomorphological unit fits in great relief Carpathian "Tisa Plain". It is located at the eastern end of it, in the central part of the Western Plain of Romania (Plain Banato-Crisan) Nordic Banat plain respectively on Bega interfluve-Mures.

The landscape looks like a plain researched territory of digression, accumulation and subsidence, with offset alluvial plains alternative focused entirely on the Aranca Basin, can be named as the reason as "Plain Aranca".

Absolute altitudes are below 100 m and are between 80-95 cm., The highest in the central part of the territory on both sides of Guicosinului and prancing in the meadow Guicosinului and large areas of northern and southern depression territory.

MATERIAL AND METHOD

To achieve the objectives were used domain-specific research methods pedology: pedological mapping, morphological description, expedited determinations in the field, laboratory information processing soil, etc..

The profiles were located in areas representative of the area searched so that it can be described most representative soil types and

subtypes. For profiles, samples were collected on pedogenetic horizons, both natural settlement (unchanged) and the amended settlement.

Soil Sampling in natural settlement (unchanged), to characterize certain physical characteristics and hydro-cylinder was the metal of known volume, the momentary soil moisture and in cardboard boxes (especially made) to characterize its micromorphology.

Sampling the settlement as to characterize physico-chemical and biological part, was in bags, each genetic horizon.

Also for the determination of specific chemical indices were agrochemical samples (processing layer). Research conditions ecopedologic and morphological description of soil was investigated after "the Romanian system of soil taxonomy (2003), completed and / or modified by" development methodology soil studies "(volumes I, II, III) developed by ICPA Bucharest in 1987.

Testing and other laboratory determinations were performed in Soil and Agrochemical Studies Office Timisoara, and the University of Agricultural Sciences and Veterinary Medicine of Banat Timisoara, where national rules and standards approved by the Standards Association of Romania (ASRO).

RESULTS AND DISCUSSIONS

In the context of conservation and increases soil fertility requires a detailed analysis of the factors limiting or restrictive of agricultural production. The analysis aims to identify these degradations or limitations on the perimeter looked degree of intensity and stability areas on which areas of manifestation can occur through prevention or improvement works.

To those listed depending on many factors analyzed in the following groups meet investigated area restrictions and limitations:

Limitations due to chemical characteristics of the soil:

Soil as a component of terrestrial ecology has a number of attributes defined and studied (the methodology) who served and serve both to clarify the genetic classification and parametric entities and for studying the influence they exert on plant growth.

A function ecometric are the following chemical characteristics of the soil: the reaction, the reserve of humus, calcium carbonate content, its intrinsic properties that affect plant growth and fruiting directly related to the manifestation and intensity phenomena.

Limitations due to soil salinization:

Saturated soils is called those soils that have a excess of the tolerance of crop plants or only slightly soluble salts, chlorides, sulfates or carbonates acumulate surface (saline soils) or only high in sodium

absorption in colloidal complex (alkaline soils) or the soluble salts and exchangeable Na (alkaline saline soils).

Salinization and alkalization includes soil. Alkalization assessing soil salinization and is based on the intensity of (S and / or A) and the depth (d) is manifest.

In light of these investigational perimeter meet the following classes of salinization and / or alkalization of soil:

- Land with severe limitations in the area of 1.90ha, 0.02%;
- Land with severe limitations in the area of 70.69 ha, 0.78%;
- Land with moderate limitations in the area of 183.06 ha, 2.3%;
- Reduced land area of 4493.44 limitations ha, 49.96%;

Limitations due to soil alkalization:

- Very severe limitations in area 18.75 ha, 0.20%;
- Very severe limitations with an area of 182.20 hectares, 2.02%;
- Moderate limitations with an area of 29.73 hectares, 0.33%;
- Low-surface limitations 7539.43 ha, 83.83%;

Limitations due to soil acidity:

Soil reaction, indicator expresses the conditions under which life biochemical processes occurring in the soil is the limiting factor due to low values. Thus we have the following limitations:

- Land with severe limitations (due to high pH) in the area of 15.10 ha, 0.16%;
- Moderate limitations (due to moderate pH) in the area of 317.50 hectares, 3.53%;
- Low-limitations (due to high pH) in the area of 4120.17 ha, 45.81%;

Limitations due to the carbonate content of Ca:

In the researched territory meet the following:

- To moderate surface of 1.75 ha, 0.2%;
- Reduced area of 1285.80 ha, 14.29%;

Limitations due humus reserve:

Soil humus content, or organic matter, is one of the defining characteristics of the state of fertility. As vegetation humus factor acts directly as the main reservoir for food. laes for plants and nitrogen. The soil is rich in humus and it is the quality of both its potential agroproduction is higher and of course vice versa.

In regard to plants demanding humus content are vegetables, hemp, beets, potatoes, sunflower, alfalfa, clover, flax, corn, etc..

In the researched territory meet the following limitations:

- Moderate-limits area of 86.51 ha, 0.96%;
- Reduced-limits area of 77.31 ha, 0.85%;

Limitations due to physical characteristics of the soil:

Physical properties of soil and hydro are the ones that determine the limits of physical and edaphic environment in which phenomena occur physicochemical and nutritional support plant that the porous polydispersity, which combines the three phases: solid, liquid and gaseous's soil and intermediate stages between them resulting from biological activity and physicochemical alteration, dispersion.

Of physical characteristics that influence production capacity hirofizice include: texture or composition size, compactness, useful edaphic volume and costumes.

Limitations due to texture or grain size composition:

Defined by the proportion of particles of different sizes participating in the composition of the mineral part of the soil profile and distribution of various particle size, texture plays a basic role in ensuring the growth and fruit-bearing plants (the differential rooting against making a texture).

Like all of the other features of soil texture determinant or correlate that caused all the fundamental characteristics of soil, enlarging or restricting its productive capacity.

Research on soil texture function ecometrica established two groups due to limitations due to the texture, coarse and fine texture. Limitations due to coarse texture is not the case.

Limitations due to fine texture

Fine textured soils with clay and clayish have a low permeability and high water retention capacity.

Because of the low permeability of water infiltration occurs slowly leaching is low and even normal amounts of precipitation soil quickly reach saturation in the upper horizon and the rest surface water.

To become highly plastic clay soils wetting and acceding reason for. they work hard. Polygonal cracks on drying or differently because of high erosion and high resistance to plowing.

Texture determines establish differentiated agro-technical measures, agrochemical and improvement to be applied to the soil.

If we find the following classes investigated area limitations:

To moderate-1666.36ha, 18.52%;

-Low-2549.61ha, 28.35%;

Limitations due to the degree of compactness

Soil compactness are the property of opposing forces that tend to mechanically loosen the particles that compose it.

Compaction effects and repercussions on hydric soil nutrients. For. address these shortcomings require repeated actions raising deep concerns depths and depth of compacted horizons, their urgency is among others determined and the degree of compaction.

In the investigated area were identified following limitations:

- Severe 1615.58ha area, 17.97%,
- moderate; 1209.48ha surface 13.45%
- Reduced surface of 292.71ha, 3.25%

Limitations due to slope

If the investigated area was identified one category of limited-reduced surface of 9.86ha, 0.10%;

Uniformity limitations due to land

The degree of non-uniformity relief directly influence the pedogenetic processes and mecanizabilitatea land or the possibility that it can be worked with agricultural machinery leveling measures need modeling etc.

In the investigated area meet the following restrictions:

- Very severe on 98.31ha; 1.09%
- Severe (meanders, abandoned riverbeds) to 2129.89 ha, 23.68%
- To moderate (forms microdepressionare) on 3612.96ha; 40.17%
- Reduced 1212.27ha; 13.47%

Limitations due to excess moisture stagnant

Excess soil moisture can be caused by storm waters, groundwater, or water leaks under a lateral external drainage and / or internal malfunction.

Excess groundwater moisture is one of the reasons gleyzation processes that determine significant changes both in terms of morphological properties of the soil, as well as on physical, chemical and biological characteristics of it.

Depending on the depth of groundwater, groundwater drainage and lateral extent of soil gleyzation

It established classes of excess moisture system. In the area there are: land stagnant excess moisture with the following restrictions:

- Severe 852.04 ha, 9.47%
- Moderate 31.33ha; 0.35%

CONCLUSIONS

As environmental factor influencing plant physiology both directly and indirectly through its many and indispensable functions for the conservation of soil productive potential amount of CaCO_3 have investigated the perimeter total values (range 0-50 cm) that not exceed 12% fact which can be considered the ecological conditions it is optimal for most crops. the characteristics of constituents, the momentum in the soil and its surface, soil humus content is one of the fundamental characteristics of its fertility status. humus quality depends primarily on the state of that reaction in base saturation of soil.

Outcome of the dowry (lithologic) and complex physical and climatic factors and soil features in development to diverse natural or influenced by humans, soil reaction and base saturation in, present in the area investigated a variety of favorability expressed by coefficients bonitary. As a physical attribute of stability, the composition size or soil texture (ind. 23) present in the investigated area very widely. under the current methodology involved both directly by bonitare texture coefficients environmental favorability, and indirectly in the correction of some indicators such as reserves of humus or on groundwater depth. due to the natural ecological potential good overall situation is still unsatisfactory soils, most soils are affected by the existence of one or more factors limiting or restrictive.

Also, the use of land is not always the most appropriate sustainable management of the land (simple rotation wheat-corn, monoculture, the abandonment of marginal land and even the productive, etc.).

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