Scientific Papers, USAMV Bucharest, Series A, Vol. LII, 2009, ISSN 1222-5339

INFLUENCE OF AGRICULTURAL TECHNOLOGY TILLAGE ON HYDRO STABILITY STRUCTURAL SOIL

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Key words: *fertility, chernozem, dispersion, structure soil*

Abstract

Soil is considered the most valuable natural resource used by humans to obtain necessary products, plant survival and harmonious development and the most important medium for biomass production. In applying differential systems technology, to conserve soil resources, preserving fertility and its "physical quality" should be considered some of acquiring land in connection with the plants, among them structural hydro stability.

Evolution of the acquisition may cause a multitude of effects which are reflected in the nutrition of the plants and the potential fertility of soil.

INTRODUCTION

In applying differential systems technology, to conserve soil resources, preserving fertility and a "physical quality" of it, should be considered some of acquiring land in connection with the plant. Evolution of the acquisition may cause a multitude of effects which are reflected in the nutrition of the plants and the potential fertility of soil.

The paper presents results of research carried out in order to highlight the characteristics of physical changes in the soil under the influence of culture and technology to identify measures to avoid the potential for reduction of soil fertility, knowledge produced by the effect of long application of various systems work the soil, a type soil mold from SCDA Marculesti.

MATERIAL AND METHOD

Analysis and observations that are the subject of this work are performed in the Experimental Station of the Research - Agricultural Development Marculesti located in South Baragan and located on a soil type mold in a state of experiment with a single factor (soil tillage), with four soil tillage system, established as randomized blocks.

The methodology for determining the structural hydro stability wet sifting consists of aggregates with sizes ranging from 2 - 0.25 mm, using a device with one screen and separation by dripping a micro-aggregates less than 0.01 mm, dispersed in the suspension resulting from sifting wet. Evolution of the acquisition may cause a

multitude of effects which are reflected in the nutrition of the plants and the potential fertility of soil. The aggregate fluid stable in diameter between 2 and 0.25 mm and the particle diameter below 0.01 mm, called dispersion (% D), are the main parameters for characterization of fluid stability of soil structure.

Relation between dispersion and content aggregate fluid stable represents **structural instability index (ID)** and the rapport of dispersion and particle content of the same size, resulting in grain size analysis, is the correction factor (K0,01%).These parameters are derived from the calculation of fluid stability of the soil.

RESULTS AND DISCUSSION

The hydro stability structural assessment, a mold that is placed experiences, was made by the following parameters: content large aggregates at the structural water, structural small aggregates stable or fine fraction (dispersion) and the index of structural instability. Evolution of the acquisition may cause a multitude of effects which are reflected in the nutrition of the plants and the potential fertility of soil.
Following the observations, the large aggregates of fluid stability presents the lowest value on the surface soil, in return tillage through capsizing soil (1%), while maintaining the same depth and in very small, which indicates a high dislocation structure that this method of work of soil is possible occurrence of natural processes of degradation by hydro stability structural loss, and what has been observed in some experimental plots.

During investigations of crust formation was observed, in shows, because the germination bed processing disk and combinator with a switch so that the soil has been requested due to abundance and rainfall, this crust has a thickness of more than 2 cm (figure 1).

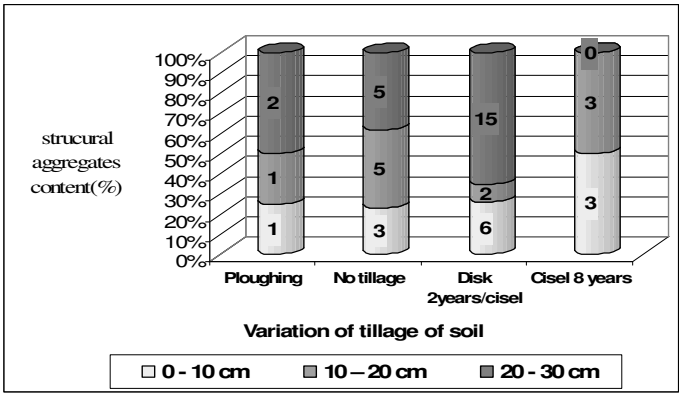

Fig. 1. Large aggregates at the structural water content of soil, 2007

Dispersion, the lowest values were recorded in a disk worked, especially in the superficial layer of 0-10 cm, because then the layer 20-30 cm to reach the values considered extremely high. The values of the increased dispersion in the surface soil were recorded in the conventional variant tillage capsizing soil return, which in the deep layer of 10-30 cm, decreases as close as a discussion variant (9%w/w).

To tillage with brush and uncultivated in a dispersion values are extremely high throughout the depth profile (figure 2).

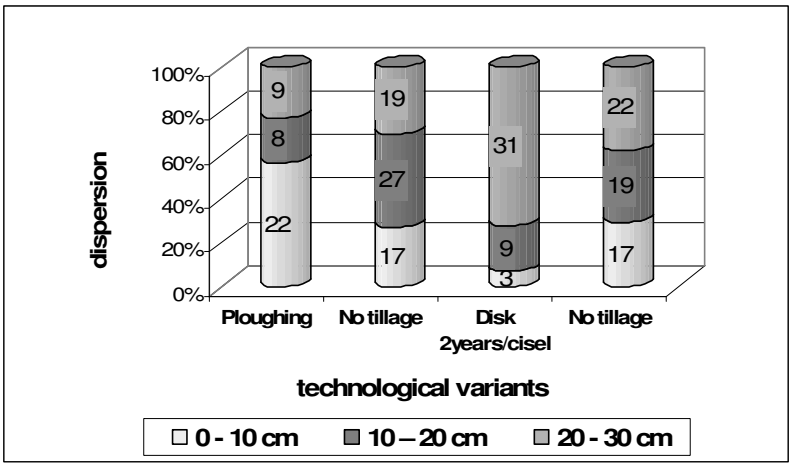

Fig. 2. Influence of tillage on soil dispersion, 2007 (%)

The index of structural instability. This was very high in whole experimental field, very high. In all experimental variants, the values are above 2, except the variant soil was processed with the disk, where the surface soil indicates lower values (medium) 0.52 (figure 3).

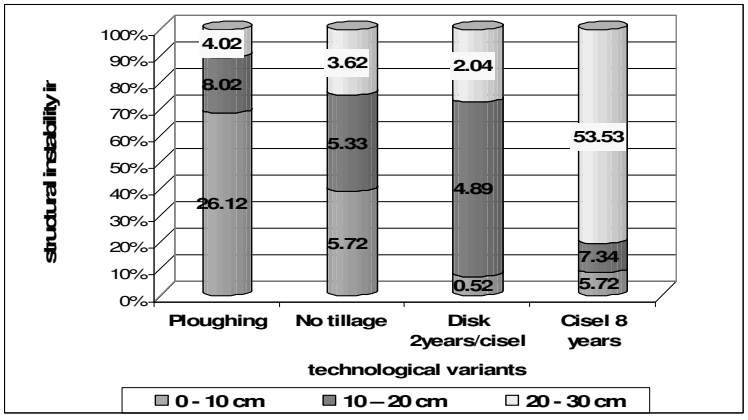

Fig. 3. Changes in structural instability index, 2007

CONCLUSIONS

1. The application of intensive farming pressure exerted by the soil tillage and weight of soil aggregates and machinery has increased the apparent density and structural hydro stability reduction, accelerating the physical degradations processes.
2. The proportion of soil aggregates hydro stable is lower in a show and worked repeatedly with superficial machine tillage the soil with disk for fragments of large soil and granulation higher in alternate versions worked through disk/chisel and uncultivated.
3. The values of dispersion and structural instability index correlated directly with each other, with lower values in variants with reduced soil tillage.

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