The effect of some tillage systems on soil pedomorphological indicators in dryness conditions on Soybean crop

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The main objective of this study consists in the effect of some tillage systems on pedomorphological indicators of cross section made in experimental field Ezareni – Iasi, on the development of advanced agricultural technologies for crop cultivation. In Romania have been conducted many researches on the influence of various tillage systems on physical, chemical and biological indicators and their residual effect, and less insisted on the morphological changes. The study of pedomorphological indicators have been accomplished on cross section (2x0.7m) performed after harvesting maize and the variants were: ploughed at 30 cm depth (V1), paraplow (V2), chisel (V3) and disk harrow (V4). The novelty and originality of the study consists in illustrating the morphological indicators through images performed from cross section and processed with special programs. The morphological description of cross section of cambic chernozem was based on the pedomorphological indicators presented in development methodology of pedological study [16]. Pedomorphological indicators of soil cross section may be additional criteria in choosing a tillage system suited to local climatic features. The cross soil section perpendicular to the direction of tillage in the chisel + superficial rotary tiller plot has a mildly loosened aspect, and locally on the tractor wheel tracks the soil is highly compacted. The repeated disc harrow use determined soil structure degradation by fragmentation of the elements and the reduction of their mean diameter. On tractor wheel tracks the soil structure is massive and the compaction process can be observed to a depth of 20 cm. In the underlying horizon (Ap) the soil maintains mildly to moderately compacted. Locally the soil is crossed by vertical or slightly oblique galleries resulted from soil macrofauna activity. In the subarable horizon formed a dense and compacted soil layer known as plowpan or hardpan.