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Modification of soil physical and chemical characteristics due to tillage systems and fertilization - influence on main yield crops in the East of Romania

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Experiments were carried out during 1990-2001 within Agricultural University of Iasi Farm and Podu Iloaiei Research Station, on a cambic chernozem formed on a loess loam, with humus content of 3,15-3,45 and a high clay ratio (34-36%).
The experiment had bassically in view the effect of different tools used for soil tillage, fertilization levels and crops rotation. The analyses made on soil profiles, pointed out important modification of soil physical and chemical characteristics as effect of using of different tillage tools. By using paraplow and chisel, the available water from soil and the aeration pore space increased from in comparison with the usual tillage tools (ploughing at 20 cm+disc harrow). Soil tilled with usual tools for 10 years determined a soil settling at a depth of 21-40 cm, where bulk density and the settling degree increased and total pore space decreased. By using the paraplow and chisel, bulk density, settling degree and hydraulic conductivity increased on 0-50 cm depth. In the condition without turning the soil we found an increase of clay, humus and nutritive elements content till the 50 cm depth. Soil structure increased with the depth in all the variants tilled with a low intensity. Soil tillage without turning furrow determined a better utilization of technological factors . fertilization and irrigation etc.