# The modification of macrostructural hydrostability degree caused by different tillage systems at winter wheat

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Several management systems can improve soil productivity. By studying aggregate stability it is possible to quantify whether or not the management is ameliorating the natural soil properties and the land capability for agriculture. Knowing the soil structure, as an essential element of soil fertility, has a great importance because it influences not only the physical conditions aeration and food regime but also the accessibility of nutrient for plant, degradation of organically material in soil and microbiological activity.
The experience was carried out in the East of Romania, in the Experimental Farm of Agricultural University of Iaşi (4707` N, 2730` E), on a chambic chernozem with a clay-loamy texture and 3,4% humus, during 2006-2007.ooThe experiment was in a "divided plots design" with three replications. Plots were 60 m2 surface, seeded with winter wheat, in a rotation soy-bean, winter wheat, maize. Each set of plots received yearly the following treatments:
Tillage systems - conventional, ploughed at 20 and 30 cm and, unconventional: disk harrow, chisel + rotary harrow, paraplow.
Fertilizers - with two levels: N80P80 and unfertilized.
The samples for soil stability analysis were taken on the depth of 0-10 cm, 10-20 cm and 20-30 cm, at seeding, on vegetations stages and at the harvesting time, air dried, gently crushed and sieved with a RETSCH AS300 sieving machine to obtain aggregates of 1-2 mm diameter. A modification of the wet-sieving method of Kemper and Rosenau (1986) was used to determine the stability of the air-dried soil aggregates in water. Four grams of 1-mm to 2-mm air-dried aggregates were placed in a 0.25 mesh/cm basket and placed in a wet sieving instrument.
The macrostructural hydrostability degree it is evaluated in percents of stabile aggregates bigger then 0.25 mm diameter, from the total mass of soil analyzed. This study on the effect of different tillage practices over a period of 1 year on the clay-loamy soil of Moldovian Plateau - Romania, shows that it resulted in changes of macrostructural hydrostability degree. According to the interpretation scale, only the Disk harrow variant had a hydric stability degree that characterize a soil "partially structured" (<78%); all other 4 variants had the velleity to surpass the 80% limit, being considered as a resistant soil to erosion process with a good aero-hydric regime; the tendency of the macrostructural hydrostability indicator was to grow from seeding to harvesting period.