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The effect of different cropping systems on erosion and fertility of eroded soils from the Moldavian Plateau

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Investigations, set up in 1968, were carried out on a Cambic Chernozem with a slope of 16%. They have shown the influence of different crop rotations and fertilization on soil erosion and fertility. The determination of water runoff, soil, humus and nutritive element losses by erosion in different crops was done by means of loss control plots, which are isolated from the rest of the area by metallic walls and have basins and devices for division; we took water and soil samples from plots, for determining the partial turbidity and for analyses of chemical elements. The combined use of mean rates of mineral fertilizers (N70P70), together with 40 t/ha manure or 6 t/ha crop residues from wheat and maize crops, has resulted in improving soil physical and chemical characteristics and getting yield increases in wheat of 2073- 2912 kg/ha, on weakly eroded lands, and 1908-2436 kg/ha on highly eroded lands, compared to the unfertilized control. On highly eroded lands, the mean wheat yields obtained during 1998-2009, were comprised between 1238 kg/ha at the unfertilized control and 3674 kg/ha at rates of 70 kg N + 70 kg P2O5 + 40 t/ha manure. From the results obtained on erosion in different crop rotations, we have found out that in 16% slope fields from the Moldavian Plateau, soil losses by erosion were diminished below the allowable limit of 3-4 t/ha/year only in case of 4 year-crop rotations with one or two reserve fields, cultivated with legumes and perennial grasses, which protect soil.