

1 Remediation of soils by ground cover

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Prolong farm land utilization without scientifically-based system of agricultural causes its degradation and loss of fertility. To explore the recovery of soils fertility we carried out long-term experiment on influence of plant covers of different origin grassy coenosis over some southern carbonate chernozemic soil properties. Research variants were: 1) agro-steppe – 16 old model of steppe coenosis, made by the method of combine grass sod replanting and undersowing of dominance of natural steppe coenosis (*Poa angustifolia*, *Koeleria cristata*, *Cynodon dactylon*, *Festuca repeliana*). Floral composition is represented by 93 species; 2) 15-old sod field naturally restored, numbering 50 species with the preference of *Poa angustifolia*, *P. pratensis*, *Koeleria cristata*; 3) monospecific 8-age seeding lawn a ploughed field served as a control plot. It was determined that the sod cover under agrosteppe led to soil structure recovery, being a characteristic feature of this kind soil natural analogy with maximum root spreading up 80 cm. It is marked almost 3 multiple increase of nitrate nitrogen content in this layer in comparison with 2 and 3 variants; calculus potassium and humus accumulation up to 60 cm depth. Old soil field favored clotted structure formation in comparison with clody-lumpy one on the ploughland with maximum root placement in 50 cm layer. It should be observed the tendency to soil acidification by grass root secretions. Under monospecies sowing it was fixed the considerable soil structure improvement due to agronomically-valued aggregates 1.5-2.0 times in comparison with arable land, the increasing of constitution ratio in 20 cm layer, the decrease of clod quantity. Here organic substance accumulation process falls behind agrosteppe to some extent, but passes ahead of sod field. Thus, any variant both artificial and natural ground cover causes the structure improvement and soil humus content, nutrient availability elements accumulation.